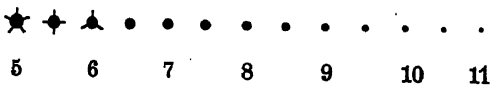
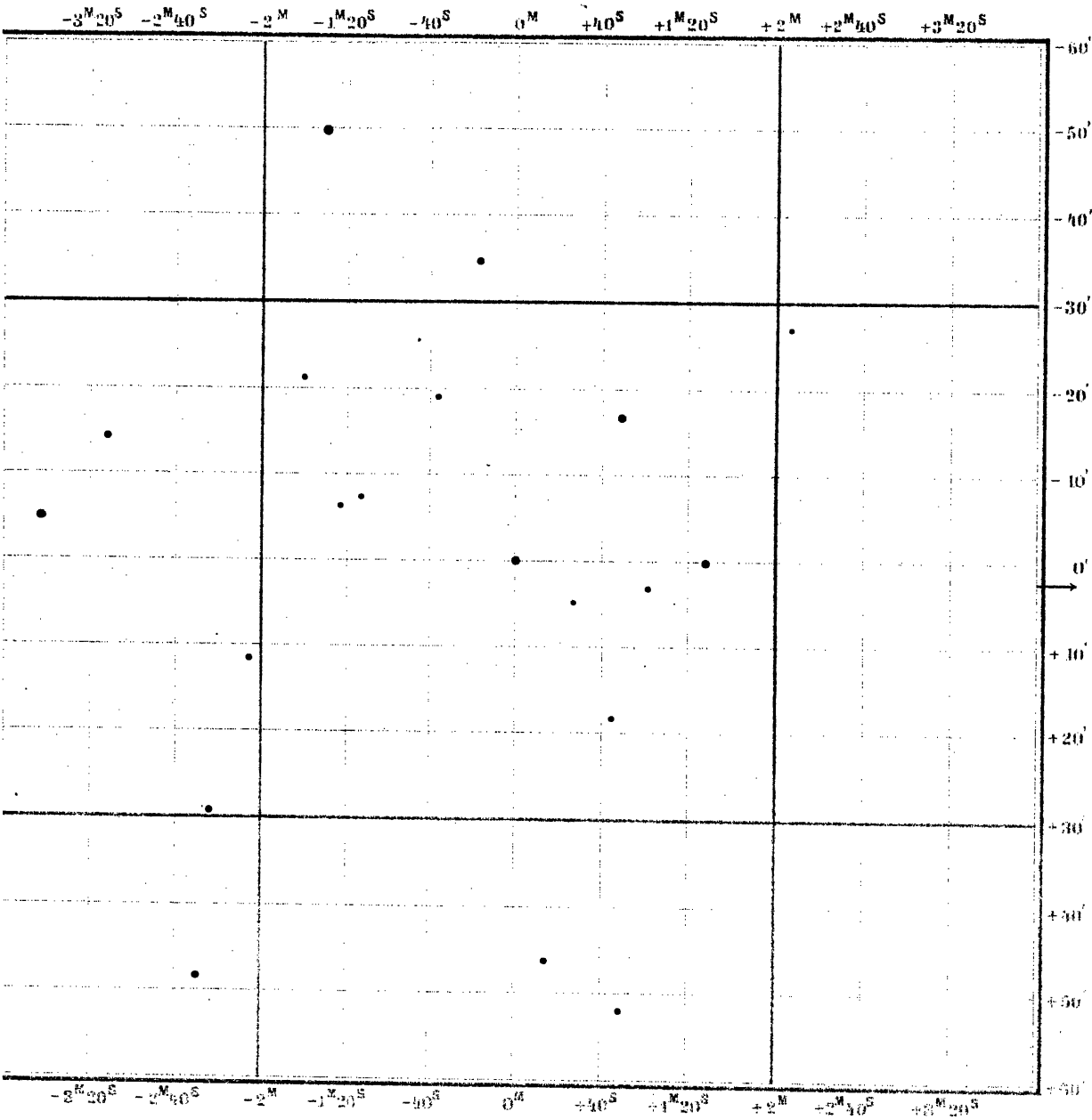


4665

RT Virginis

(1900.0) $12^{\text{h}} 57^{\text{m}} 34^{\text{s}}$ ($+3^{\text{s}}.04$) $+5^{\circ} 43'.4$ ($-0'.32$)

Color: 5, III; Magnitudo: $8\frac{1}{2}$ –10?



Series IV.

ATLAS STELLARUM VARIABILIIUM.

SERIES PRIMA,

COMPLECTENS STELLAS VARIABILES INTRA LIMITES DECLINATIONIS

—25° ET 0°,

QUARUM LUX MINIMA EST INFRA MAGNITUDINEM 10^M,

COMPOSITA

A

I. G. HAGEN, S. I.,

DIRECTORE SPECULAE COLLEGII GEORGIOPOLITANI, WASHINGTON, D. C.

ET TYPIS DESCRIPTA SUBSIDIIIS

CL. DOMINAE CATHARINAE W. BRUCE.

BEROLINI,
APUD FELICEM L. DAMES,
MDCCCIC.

PRAEFATIO.

Atlas Stellarum Variabilium divisus est in quinque Series, quarum tres priores ad observandas stellas variables tenuissimam lucem attingentes adiumento sunt, quarta vero ad illas, quarum lux minima instrumentis mediocribus patet, quinta denique ad reliquas, quae nudis oculis conspicuae manent.

Iam quo facilius intellegatur, qua ratione hic Catalogus sit compositus et stellae descriptae in Chartis, haec videntur esse explicanda.

Primum quidem inscriptiones Chartarum ea omnia continent, quae ad ipsas observationes nocturnas sunt necessaria, et partim desumptae sunt ex III. Catalogo D. Chandler, postquam eum a vero non multum aberrare nostra observatione cognovimus.

Color stellae variabilis ita numeris designatur, ut 0 albus, 10 ruber significetur.

Colori additus est numerus Latinus, qui secundum distributionem P. Secchi spectrum stellae variabilis designat. Qui numeri exscripti sunt ex variis catalogis, quos ediderunt Pickering (H. C. O. vol. XVIII, pp. 244—252), Espin (The Red Stars, by J. Birmingham, p. 109 sqq.), Krueger (Katalog der farbigen Sterne, et Astrophysical Journal, vol. II, p. 149 sqq.).

Quae denique sit lux maxima et minima stellae variabilis, mediis quibusdam numeris indicatur, quos ex iis, qui variis temporibus observati sunt, collegimus.

In inferiore autem margine Chartarum notatum est, si qua stella variabilis eiusve vicinitas in Chartis Eclipticis Parisiensibus, Clintonensibus, Vindobonensibus descripta invenitur.

Veniamus ad ipsas Chartas, quae, ut contemplanti reticulum rubrum sua sponte apparet, in utraque coordinata singulos gradus comprehendunt. Divisae sunt in partes binas, quarum altera interior, figura quadrata, stellas fere omnes continet, quae nostro telescopio (12 digit. sive 30.5 cm.) et scala infra describenda facile determinari possunt, altera vero exterior interiori circumscripta illas tantum, quae in catalogo Bonnensi (BD.) inveniuntur. Ipsa stella variabilis est media et ita designatur duobus circulis, ut exterior lucem maximam, interior indicet minimam. Hic tamen notanda sunt duo: alterum est in interiore quadrato tenuissimas stellas, quarum claritas sit infra lucem minimam variabilis, plerumque esse omissas; alterum est exteriori figurae stellas aliquas, quae in Catalogo BD. desiderantur, esse insertas, ubi periculum ambiguitatis id requirere videretur.

Atque haec de Chartis, iam Catalogum explicemus.

Inscriptiones ex eodem, quem supra commemoravimus, fonte haustae sunt, et ea suppeditant, quae ad computationes faciendas videntur esse necessaria.

Loca autem singularum stellarum variabilium pro anno 1855.0 data sunt, ut additis differentiis $\Delta\alpha$ et $\Delta\delta$ facilius inveniuntur loca aliarum stellarum in catalogo BD. descripta, quamvis ipsae differentiae valeant pro anno 1900.0, quae est epocha in Chartis notata.

Columnae Catalogi eae imprimis explicatione indigent, quibus magnitudines collocationesque stellarum indicantur.

Claritas stellarum non ita observata est, ut sua cuique magnitudo immediate attribueretur, sed ita, ut gradus (Stufen), quibus aliqua stella ab alia paulo lucidiore vel tenuiore differret, immediate et sine adiumento photometrico aestimarentur.

Atque hoc modo stellae lucidiores Seriei I^{ae}, II^{ae}, III^{ae} instrumento minore (4.8 digit. sive 12.2 cm) bis intra annos 1892 et 1895 aestimatae sunt, et iterum bis instrumento maiore intra annos 1895 et 1898 simul cum stellis tenuioribus. Itaque lucidarum stellarum gradus innituntur determinationibus quattuor, debiliorum autem duabus. Quae determinationes mensem saltem inter se distabant. Harum igitur observationum fructum principalem et immediatum ea columna ante oculos ponit, quae inscribitur gradus et composita est ex partialibus graduum sequentiis in unam seriem ordinatis.

In proxima columna habes magnitudines delineandis Chartis inservientes, quae ea lege ex gradibus computatae sunt, ut et ipsi gradus a clarioribus stellis usque ad tenuissimas in unaquaque Charta invariables supponerentur et magnitudines scalae Bonnensi quam maxime consentirent, saltem intra limites 7^M et 10^M. Hac quidem computandi ratione fit, ut et valores graduum et magnitudines stellarum tenuissimarum aliae sint in aliis Chartis. Quae ratio cur ceteris anteposita esset, alibi explicavimus (vide Astr. Nachr. vol. 145, p. 33 sqq., et Astroph. Journal, vol. VI, p. 441).

Quomodo autem hae magnitudines ex gradibus computatae sint, apparet ex formulis, quae singulis catalogis annexae inveniuntur. Quae formulae quantum fini, quem supra descripsimus, respondeant, ex consensu columnarum, quae inscribuntur Magn. et BD., diiudicandum est.

Proximum est, ut loca stellarum et qua ratione sint determinata et quam prope ad veritatem accedant, exponamus. Quae loca definita sunt ope semicirculi vitrei, cuius linea diametralis Ascensionibus Rectis, lineae transversales Declinationibus observandis inserviebant. Scala haec ita divisa est in decem partes, ut singula intervalla terna aequant minuta, atque constat ex lineis tam crassis, ut caeli luce naturali discerni possint.

Declinationes mensurabantur usque ad decimam unius intervalli partem (seu 0.3), idque semel tantum, sine festinatione, dum telescopium horologio impellente motum stellarum sequebatur. Ex quo intellegitur errorem 0.3 vel etiam 0.6 in singulis declinationibus expectari posse. Si quando error deprehendatur aequalis vel fere aequalis 3.0, ortum habere censendus est in numerandis scalae lineis.

Ascensiones Rectae cum in chronographo ternis observationibus definitae sint, propius ad veritatem accedunt neque in ipsis stellis debilioribus plus quam 1^a a vero aberrare censendae sunt.

Quantum autem scala ad circulum horarium inclinaretur, pro singulis Chartis determinatum est compluribus stellis, quarum positiones notae erant vel ex catalogis diversis iam pridem editis vel ex zonis A. G. C., quarum partes, antequam typis editae sunt, benigne ad nos mittebantur, vel denique ex observationibus instrumento meridiano hic in hunc finem institutis.

Epocha, ad quam hae quantitates $\Delta\alpha$ et $\Delta\delta$ referendae sunt, est annus 1900.0, cum huius primae seriei observationes coeptae sint ineunte anno 1894. Notandum est autem loca stellarum extra limites Chartarum sita plerumque ex BD. esse desumpta.

Iam postremae columnae notas explicemus. Ibi „Duplices“ dicuntur eae stellae, quarum partes componentes separatim observari vel etiam distingui facile non poterant. Additi etiam sunt ex variis catalogis stellarum duplicium numeri quidam, qui explicatione non indigent. Designatae autem sunt stellae duplices hac potissimum ratione, ne quis iis in luce stellae variabilis metienda uteretur.

Alterum genus notarum est nominum, ut Sch. et Ch., quibus significatur illas stellas in catalogis DD. Schoenfeld et Chandler stellae variabili vicinas indicari. Haeque nomina signa quaedam sequuntur satis perspicua, quorum postremo (\pm) monemur vel alterutram vel utramque coordinatam ibi esse inversam.

Quoniam claritas earum stellarum, quae magnitudinem 7^m superant, methodo a nobis adhibita bene determinari non potest, adduntur in notis magnitudines ex aliis quibusdam Catalogis petitaе. In hac I^a Serie usui fuit Catalogus D. E. Sawyer (S.) (vide Memoirs of the American Academy of Arts and Sciences vol. XII No. I). In aliquibus foliis habes ex Catalogo CD. magnitudines stellarum infra declinationem

-22^o a D. Ioanne M. Thome determinatas, in uno folio ex Catalogo Georgii Ph. Bond magnitudines stellarum circa Trapezium et stellam variabilem T Orionis sitarum.

Stellas autem, quae in variis Chartis Eclipticis inveniuntur, in Notis designare parum utile visum est, quoniam neque magnitudines neque positiones earum in catalogos redactae sunt.

Reliquum est, ut dicam observationes et positionum et graduum lucis factas esse a me ipso, computationes autem magnitudinum stellarum et inclinationum scalae a sociis meis, illas a Fr. M. Esch, S. I., has a P. I. T. Hedrick, S. I.

Neque praetereundum est D. Henricum M. Parkhurst et D. Ernestum Hartwig chartas huius seriei examini subiecisse, eo consilio, ut error confundendi stellam variabilem cum aliis vicinis excluderetur.

Quibus viris aliisque omnibus, qui huic operi vel componendo vel typis edendo auxilium praebuere, gratissimi animi sensum exprimere liceat. Quae gratiae imprimis debentur Clarissimae Dominae, cuius nomen in folio titulari apparet; item D. Eduardo C. Pickering, cuius illa commendationibus inducta huic editioni subsidia praebuit; debentur etiam librario, qui, his subsidiis minime in securo collocatus, tamen in hoc Atlante ad pulchritudinis normam imprimendo neque labori pepercit neque periculo.

Faxit Deus, quo magis in dies caeli enarrent gloriam suam, ut hoc Atlante via paretur ad stellarum variabilium arcana altius investiganda, plenius intellegenda.

Ex Collegio Georgiopolitano, Epiphania Domini
anno MDCCCIC.

I. G. Hagen, S. I.

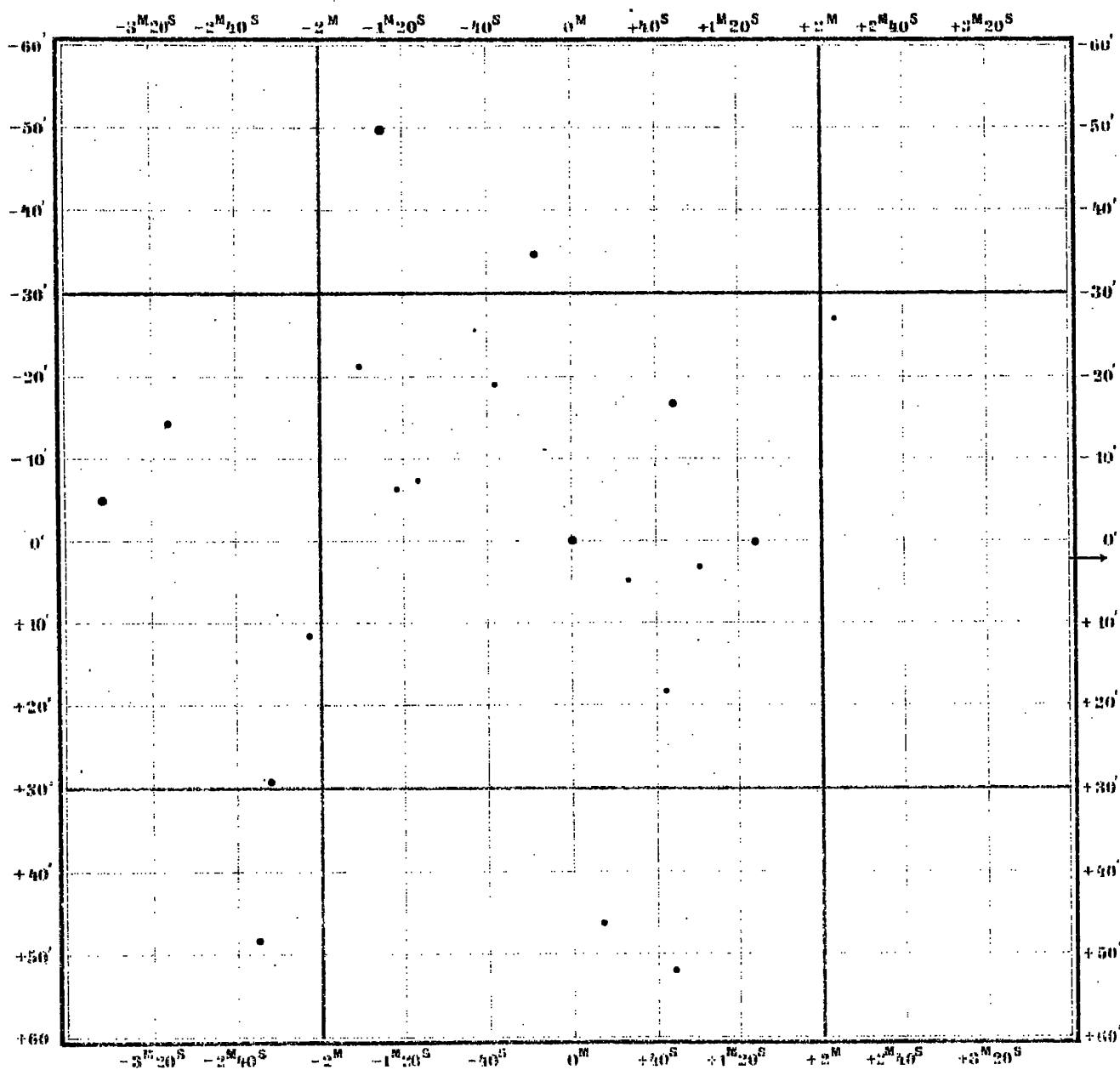
4665

RT Virginis

(1900.0) $12^h 57^m 34^s$ (+ 3.04) + $5^\circ 43'.4$ (- 0.32)

Color: 5, III;

Magnitudo: $8\frac{1}{2}$ —10?



★ ✦ ▲ ● ● ● ● ● ● ● ● ● ●
5 6 7 8 9 10 11

Series IV.

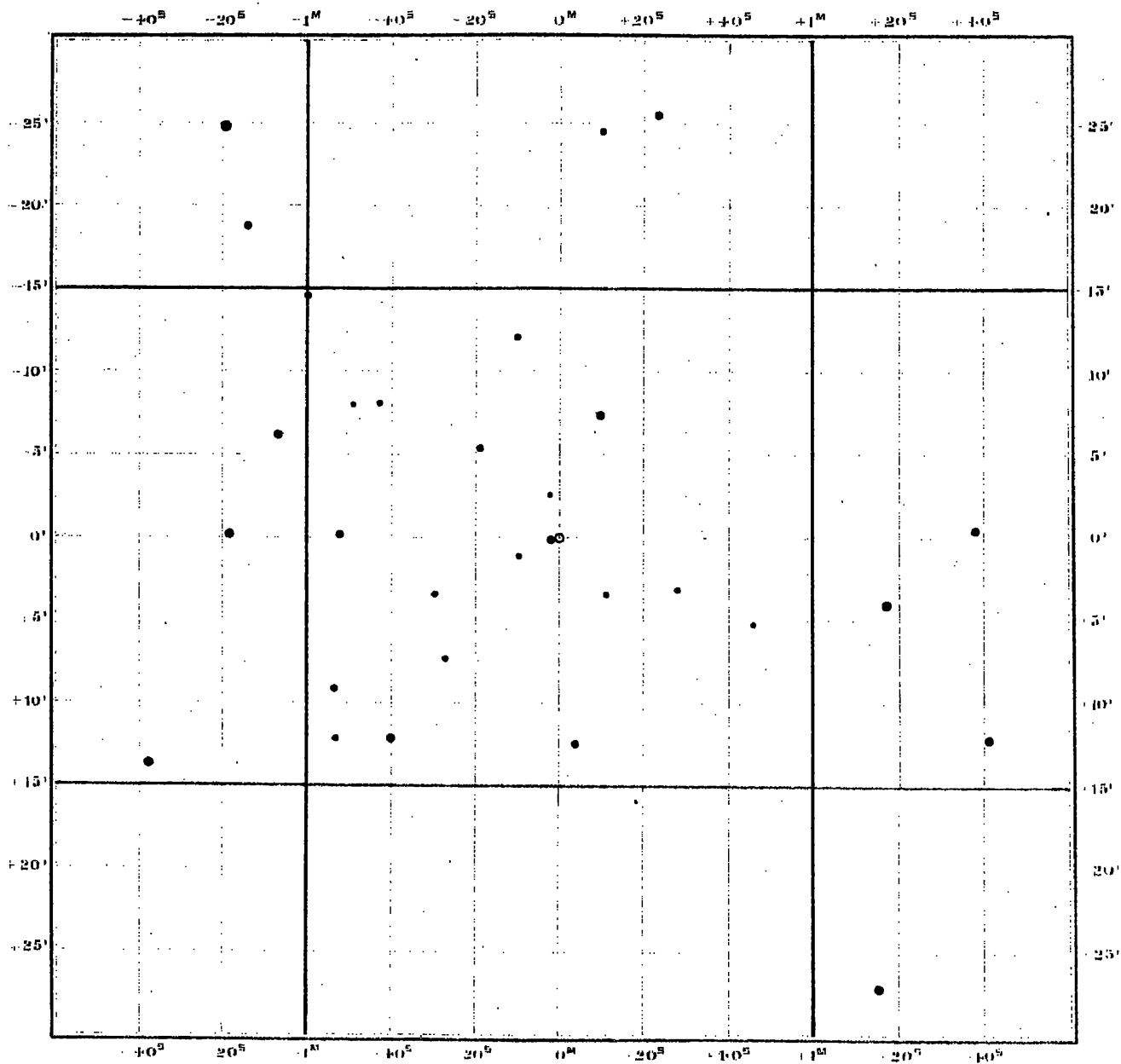
5617

U Librae

(1900.0) $15^h 36^m 13^s$ (+3^s.48) $- 20^\circ 51'.5$ ($-0'.20$)

Color: 3.4; —

Magnitudo: 9 — < 14.



7 8 9 10 11 12 13

Series I.

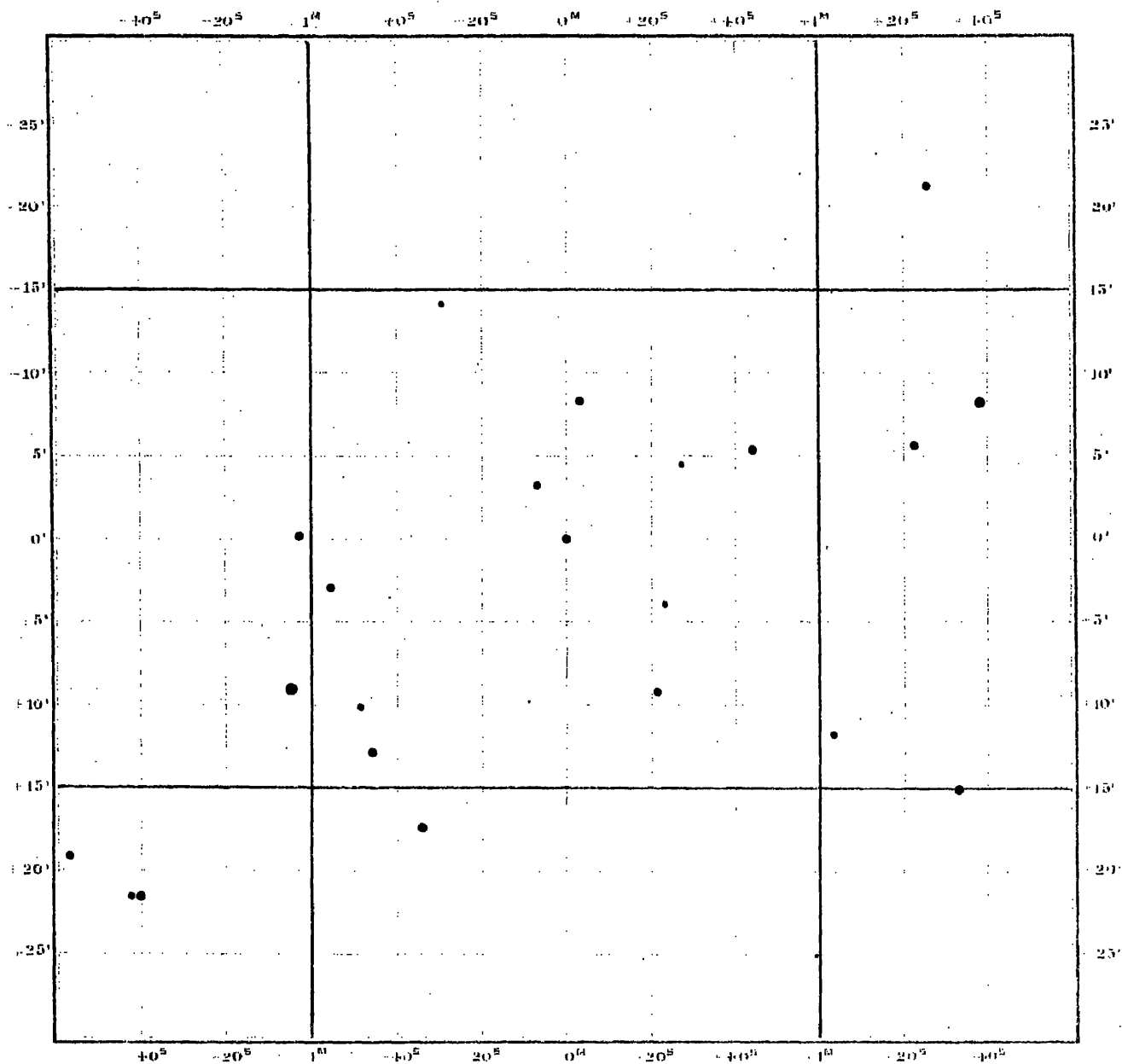
5928

T Ophiuchi

(1900.0) $16^{\text{h}} 28^{\text{m}} 1^{\text{s}}$ ($+3^{\text{s}}.42$) $-15^{\circ} 55'.2$ ($-0'.13$)

Color: —; —

Magnitudo: 10 – 13 $\frac{1}{2}$



7 8 9 10 11 12 13

Series I.

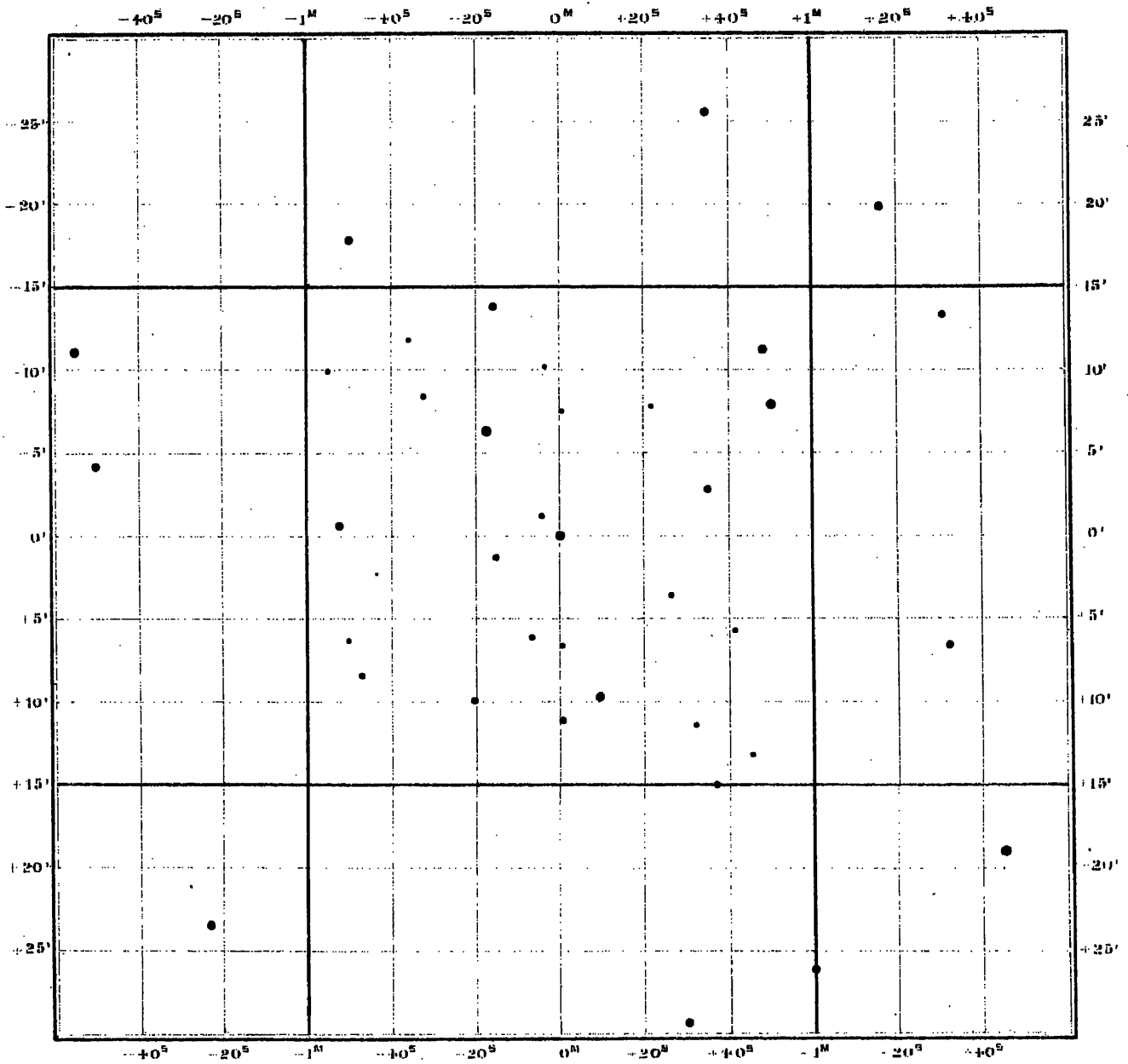
5761

Z Scorp

(1900.0) $16^{\text{h}} 0^{\text{m}} 8^{\text{s}}$ (+3.^s 53) — $21^{\circ} 27'.7$ (— 0'.17)

Color: —; —

Magnitudo: 9 — 12½



7 8 9 10 11 12 13

Series I.

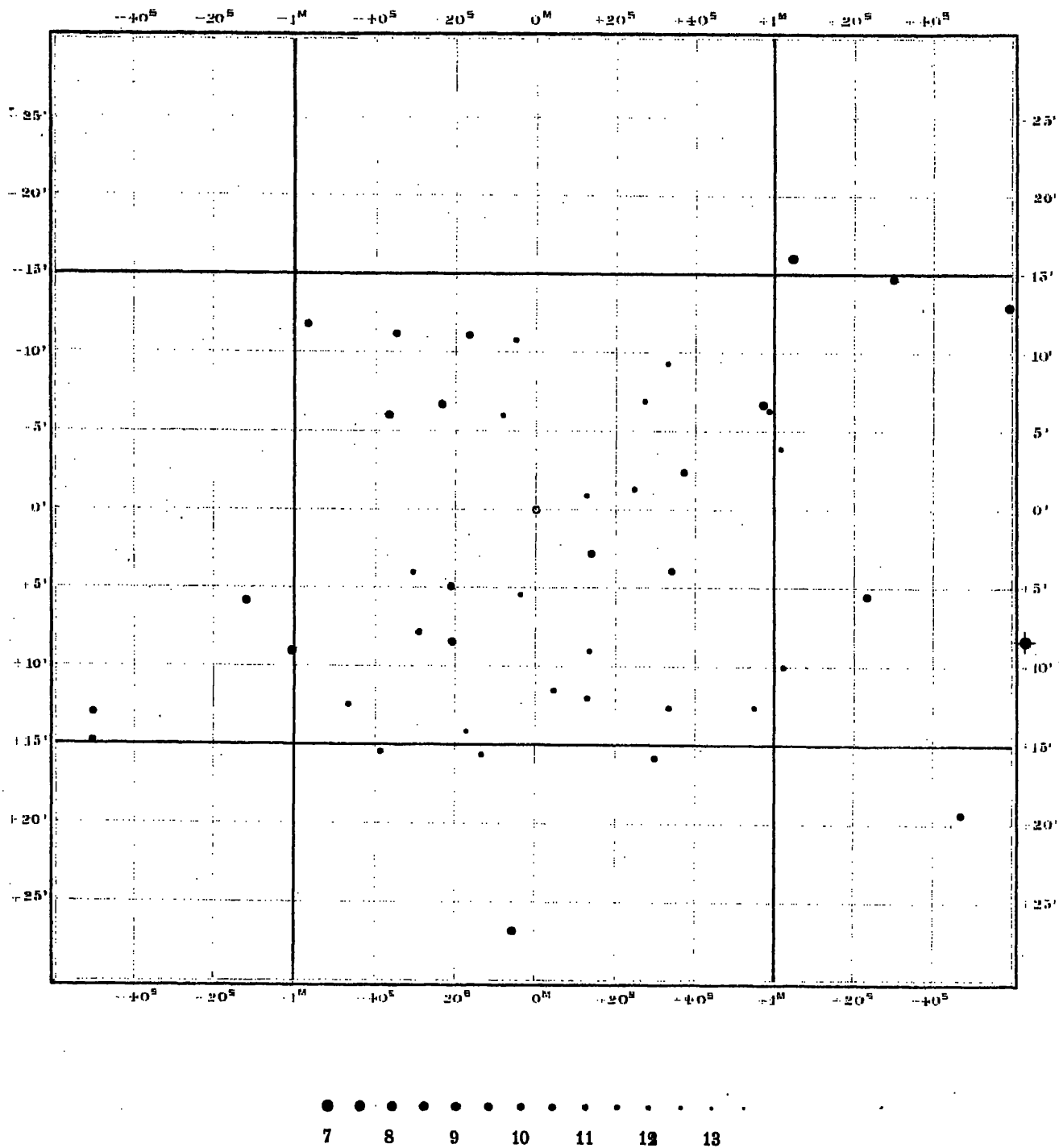
5583

X Librae

(1900.0) $15^{\text{h}} 30^{\text{m}} 26^{\text{s}}$ ($+3^{\text{s}}.48$) $-20^{\circ} 50'.0$ ($-0'.20$)

Color: —; —

Magnitude: $9\frac{1}{3} - 14$.



Series I.

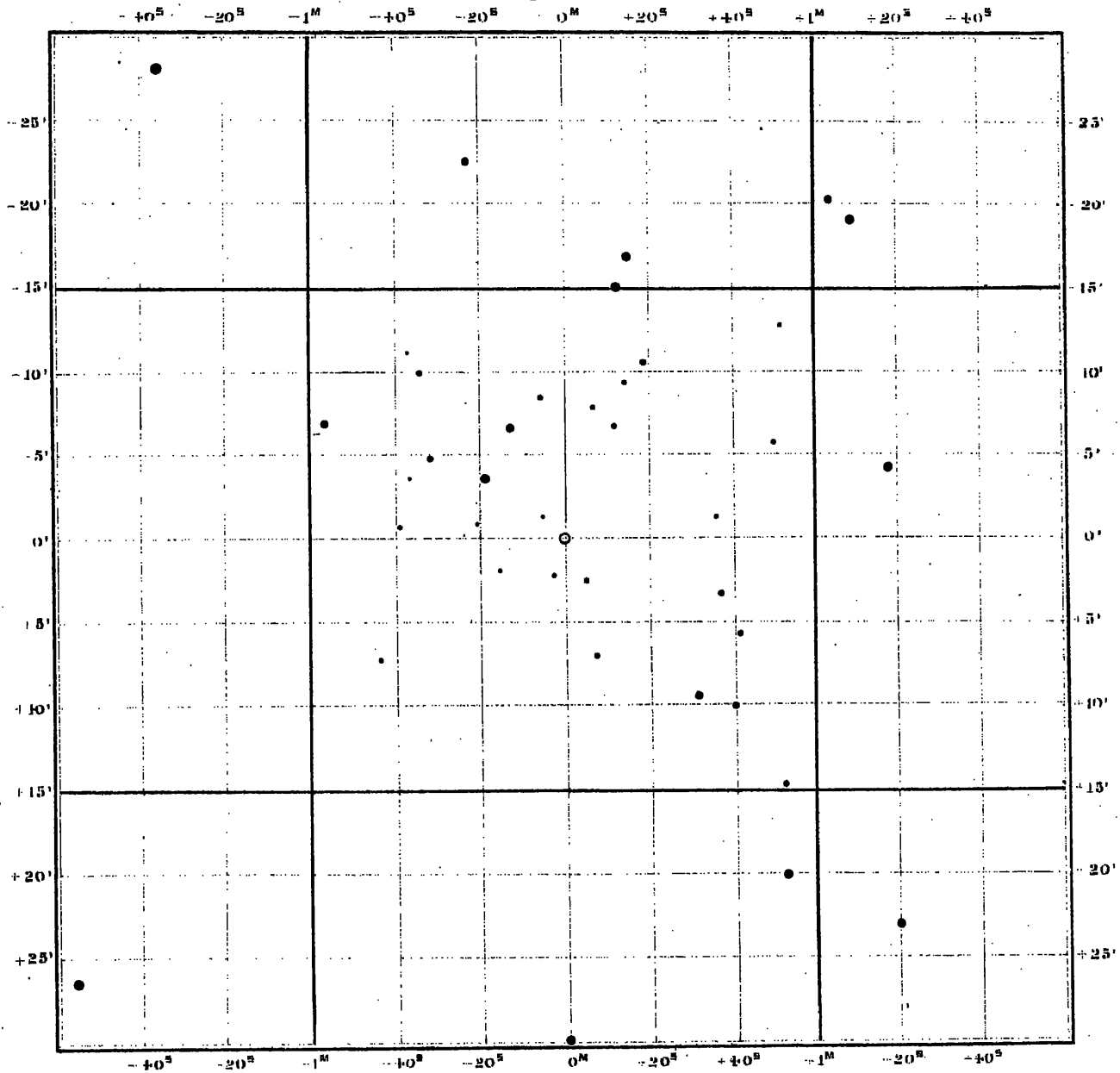
5494

S Librae

(1900.0) $15^{\text{h}} 15^{\text{m}} 39^{\text{s}}$ (+ 3.44) $- 20^{\circ} 1'.6$ (- 0.22)

Color: 3.0; III.

Magnitudo: 8 - < 13.



7 8 9 10 11 12 13

Series I.

Chart. Paris 46.

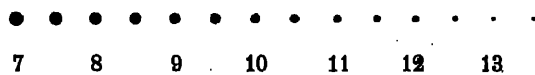
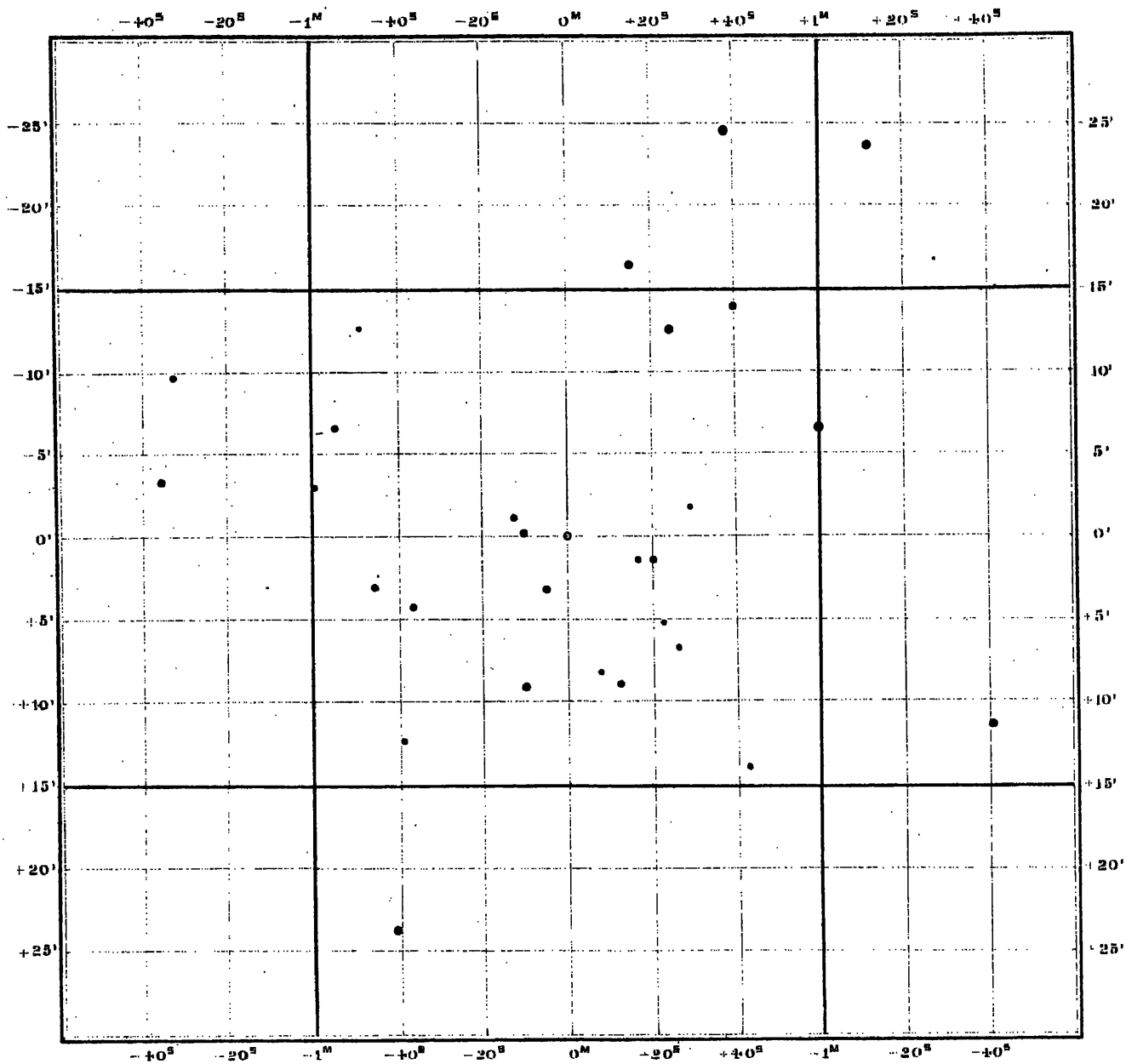
5644

Z Librae

(1900.0) $15^{\text{h}} 40^{\text{m}} 42^{\text{s}}$ ($+3^{\text{s}}.49$) $-20^{\circ} 48'.8$ ($-0'.19$)

Color: —; —

Magnitudo: 10 — < 13.

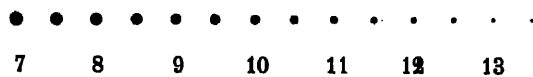
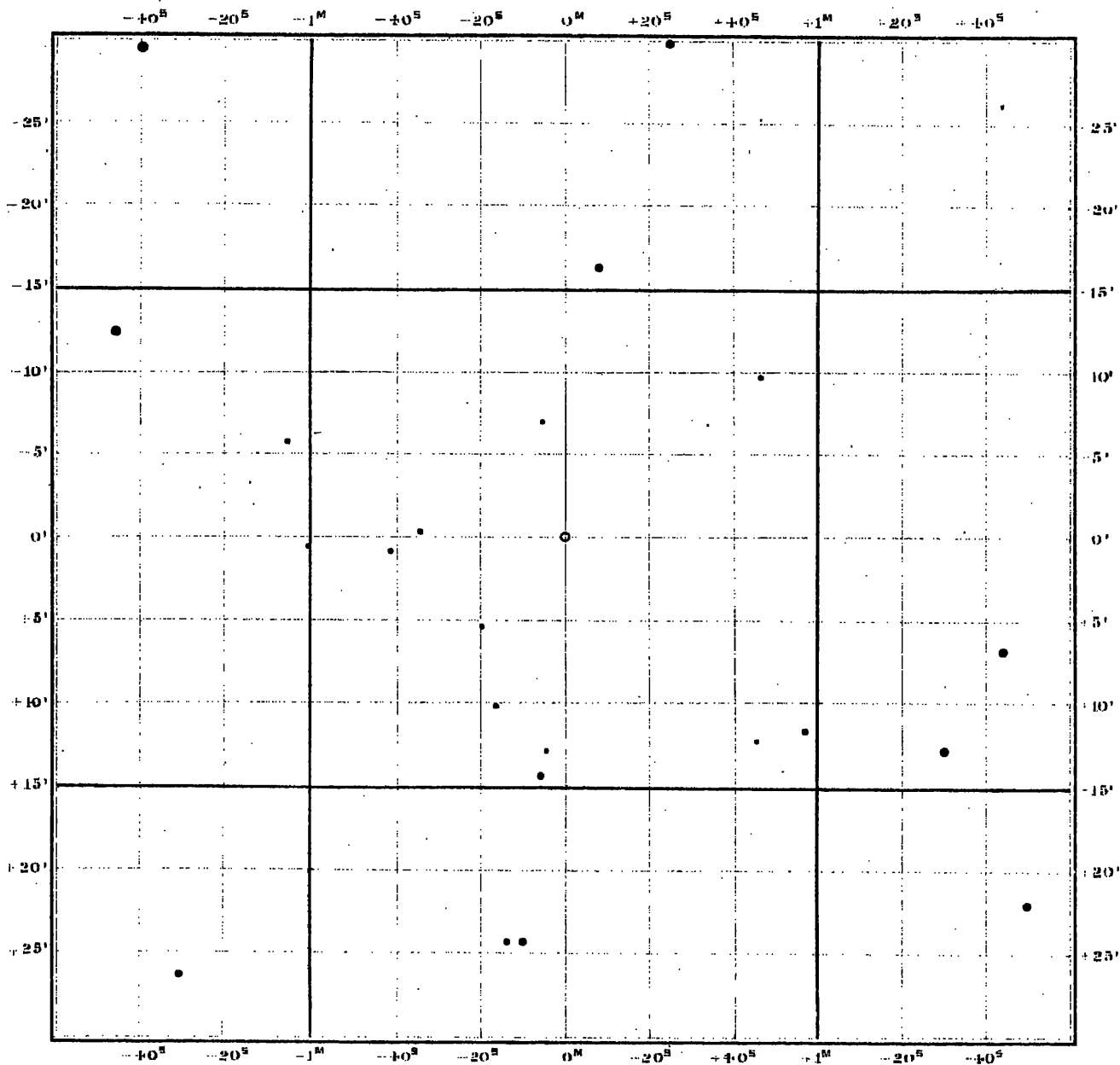


Series I.

V Virginis

Color: 2.7; III.

Magnitudo: $8\frac{1}{2} - < 13$.



Series I.

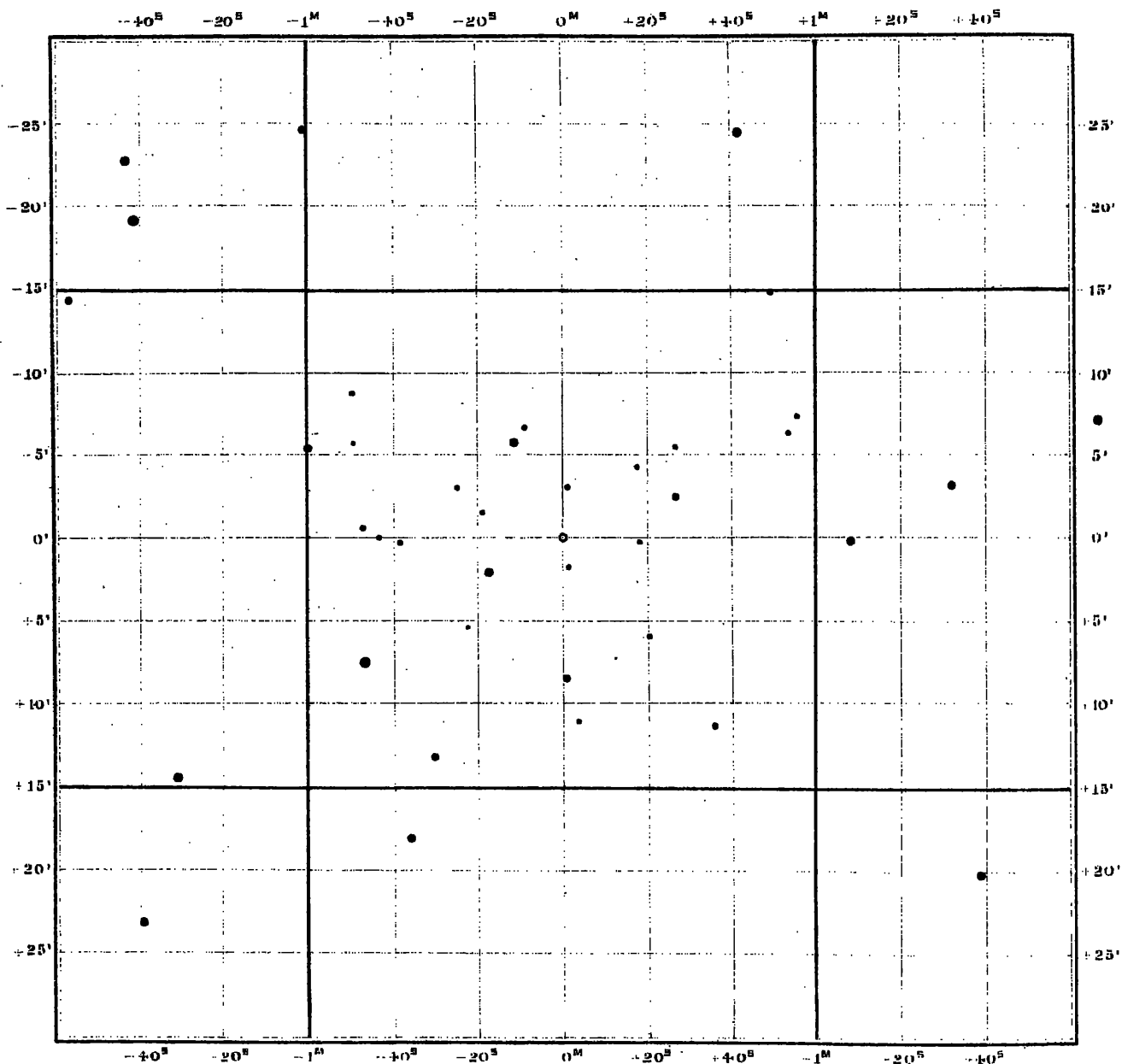
5776

X Scorpii

(1900.0) $16^{\text{h}} 2^{\text{m}} 40^{\text{s}}$ ($+3^{\text{s}}.53$) $-21^{\circ} 15'.6$ ($-0'.16$)

Color: —; —.

Magnitudo: 10 — < 13.



7 8 9 10 11 12 13

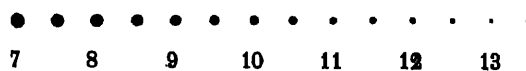
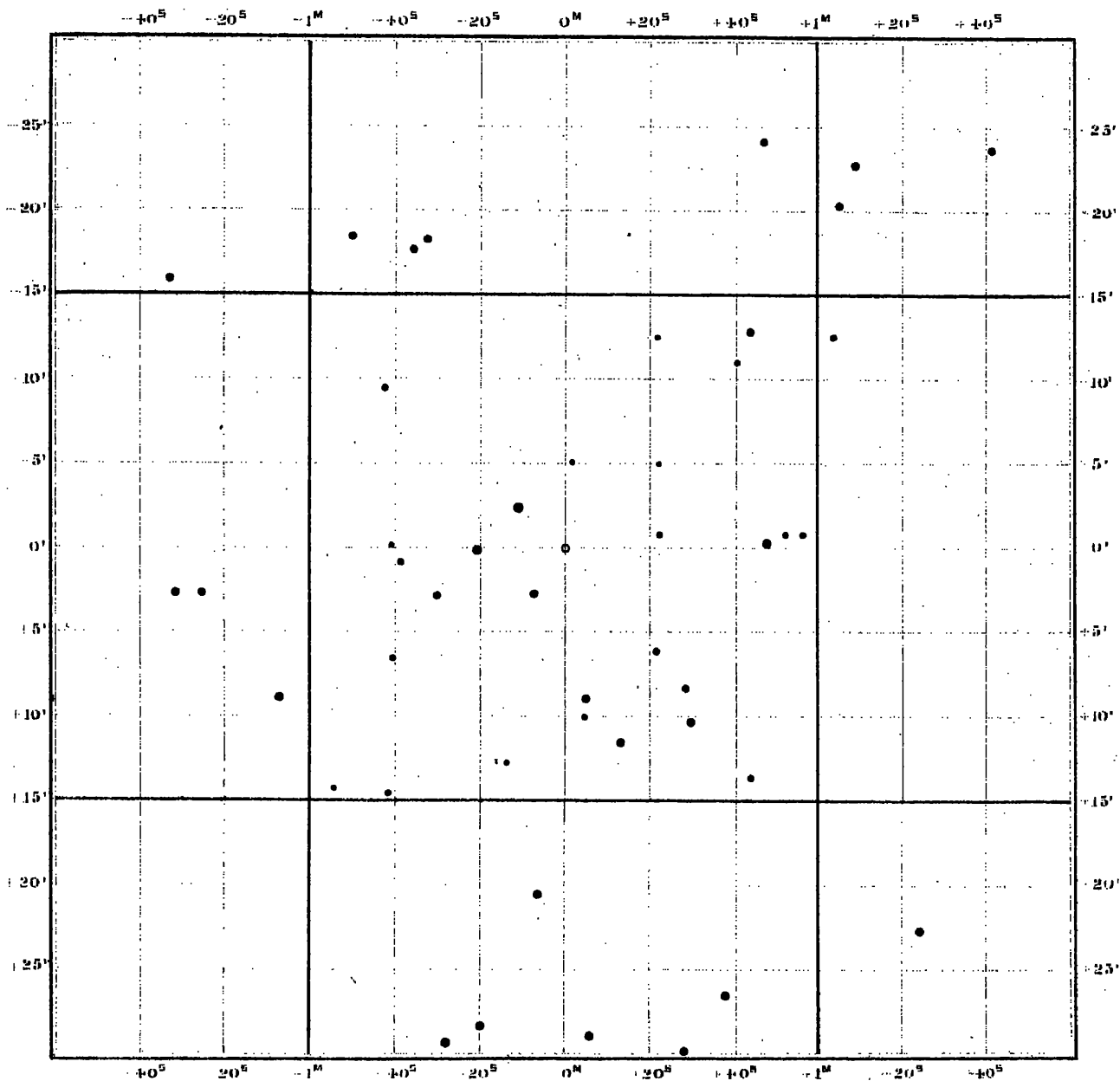
Series I.

Chart. Paris. 48-49.

Z Virginis

Color: —; —

Magnitudo: $10 - < 14$.

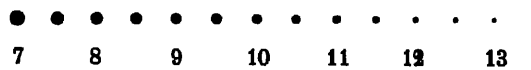


Series I.

Chart. Paris. 43 et Clinton. 17.

T Virginis

Magnitudo: $8\frac{1}{2} - < 13$.



Series I.

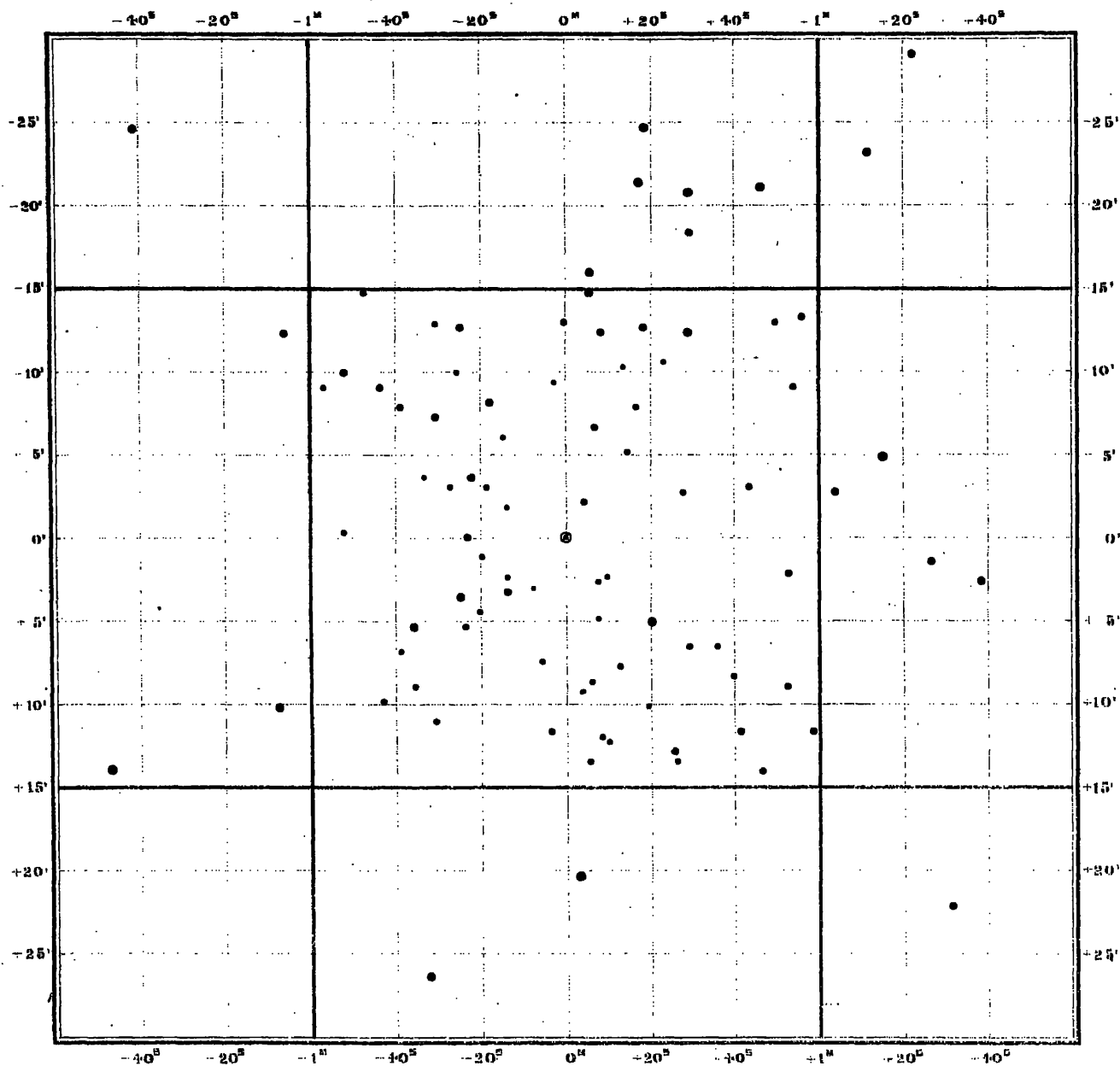
2684

S Canis Minoris

(1900.0) $7^h 27^m 18^s (+3^s.26) + 8^\circ 31'.9 (-0'.12)$

Color: 4.5; III.

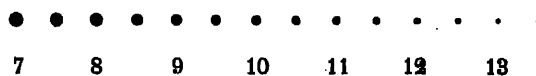
Magnitudo: $7\frac{1}{2} - 11\frac{1}{2}$.



Series II.

W Librae

Color: —; — Magnitudo: $10 \leq 14$.



Series I.

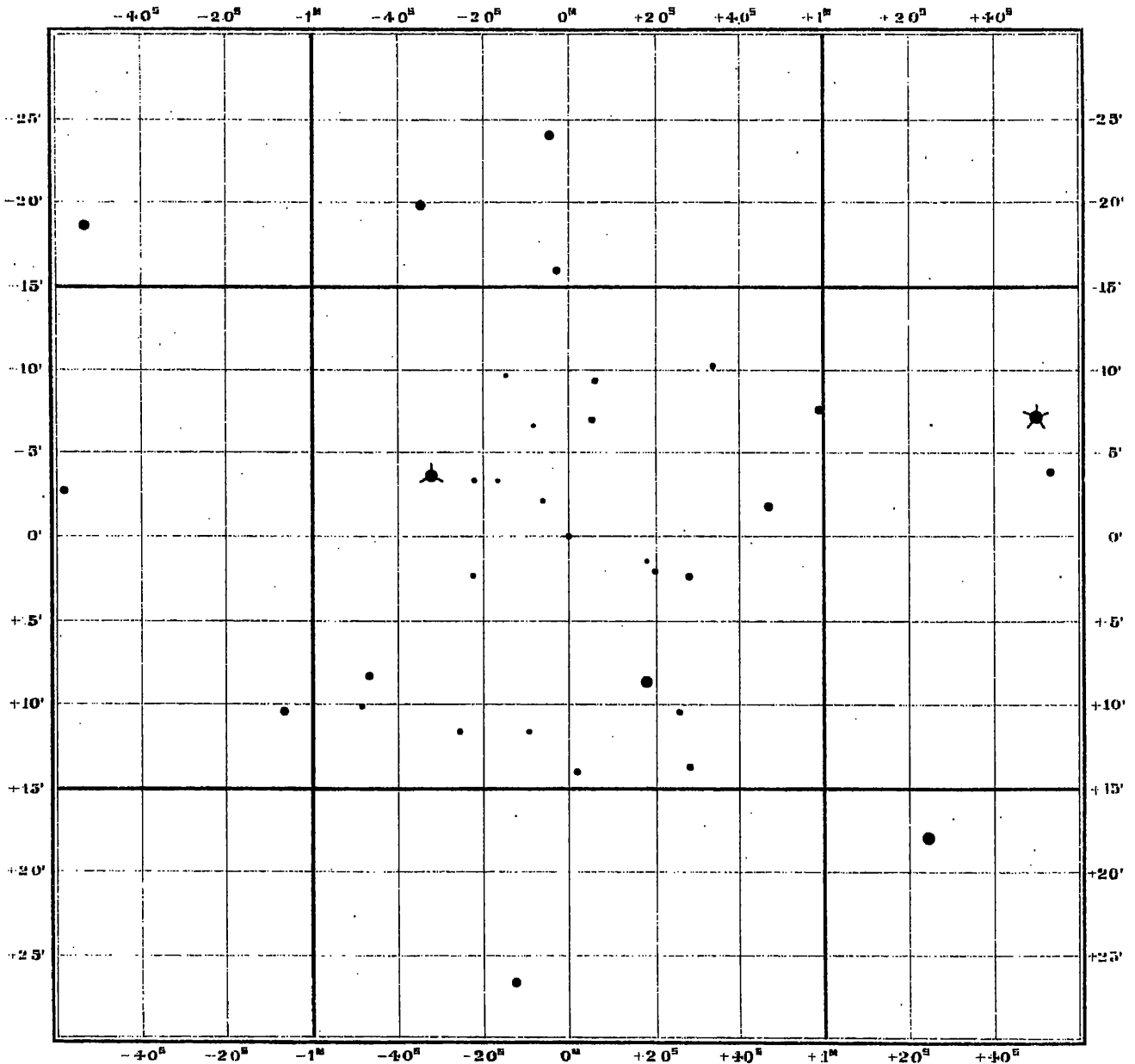
5037

RR Virginis

(1900.0) $13^{\text{h}} 59^{\text{m}} 35^{\text{s}}$ (+3.^s 17) — $8^{\circ} 43'.1$ (— 0'.29)

Color: —

Magnitudo: $11\frac{1}{2}$ — < 14.



7 8 9 10 11 12 13

Series I.

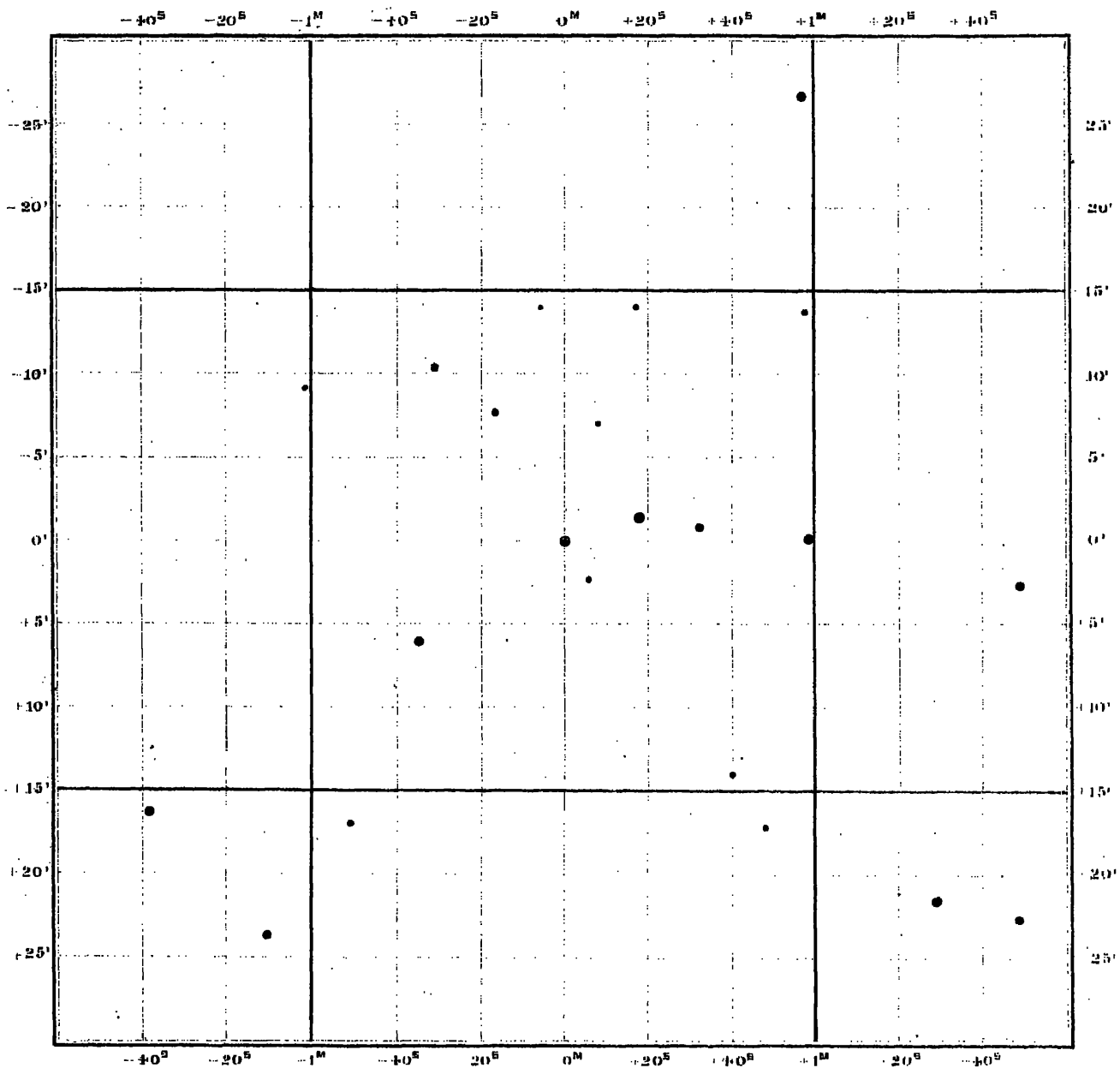
4492

Y Virginis

(1900.0) $12^{\text{h}} 28^{\text{m}} 44^{\text{s}}$ (+ 3.08) — $3^{\circ} 52'.3$ (— 0'.33)

Color: 3.6; —

Magnitude: $8\frac{1}{2}$ — 12.



Series I.

Chart. Paris. 38 et Clinton. 16.

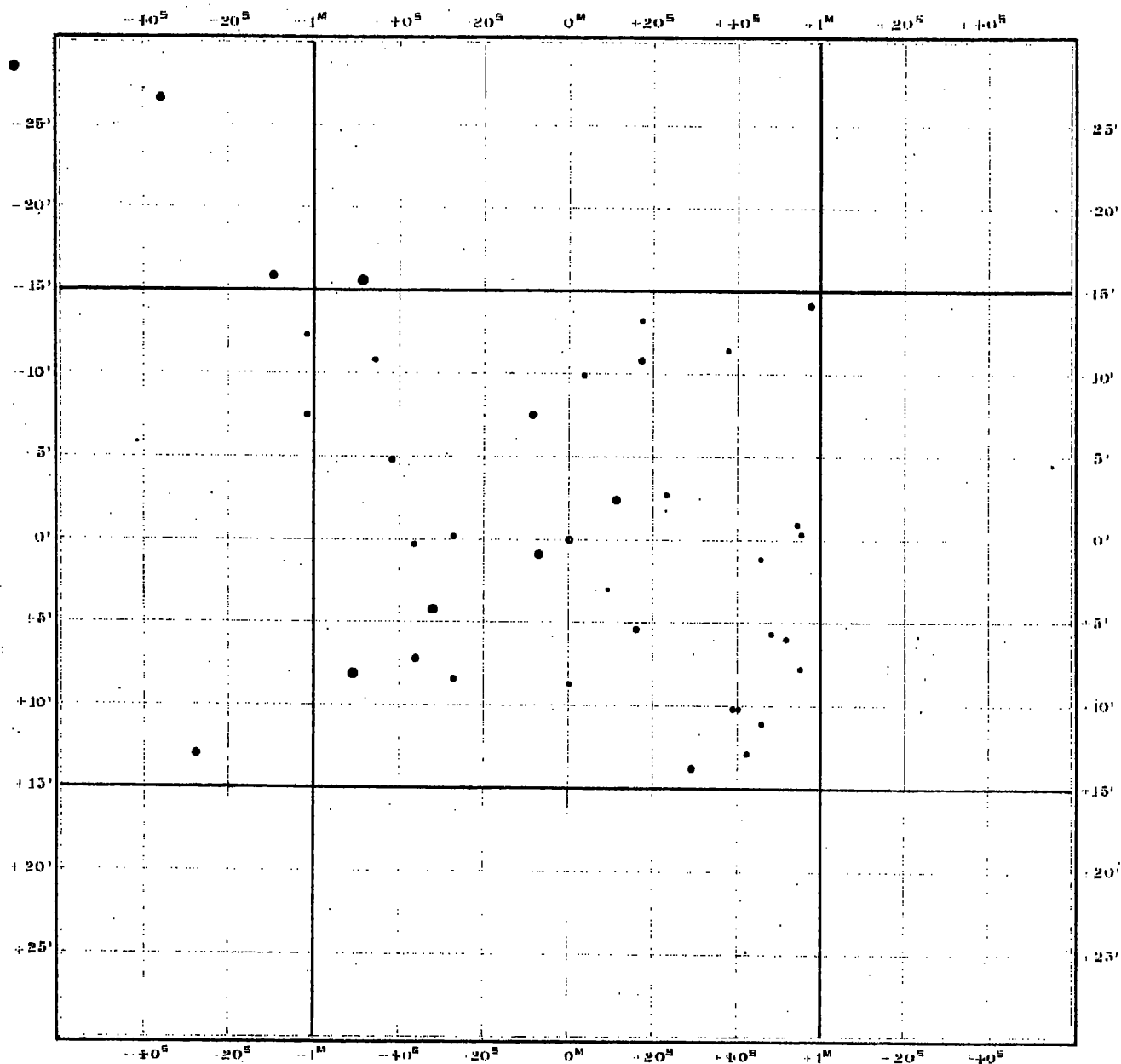
5795

W Scorpii

(1900.0) $16^h 5^m 55^s$ (+3.50) $-19^\circ 52'.6$ ($-0'.16$)

Color: —; —

Magnitudo: $10\frac{1}{2} - < 14\frac{1}{2}$.



7 8 9 10 11 12 13

Series I.

Chart. Vindobon. 6 et Paris. 49.

R et S Scorpii

Color: 0.9 et 0; —. —

Magnitudo: $10 - < 13$ et $9^{1/2} - < 13$.

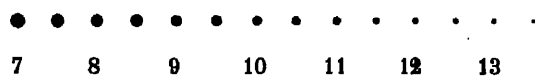
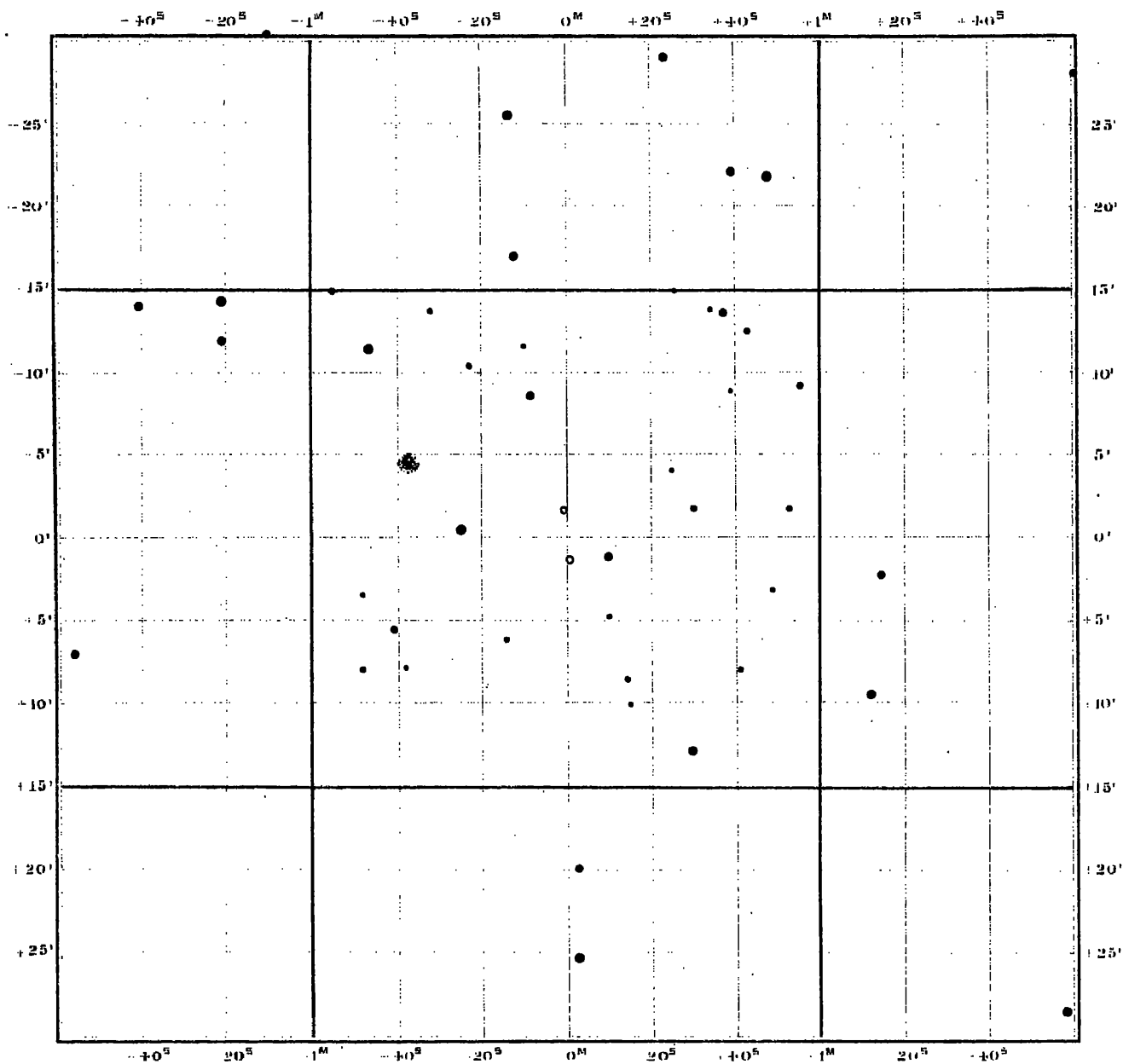


Chart. Paris. 49.

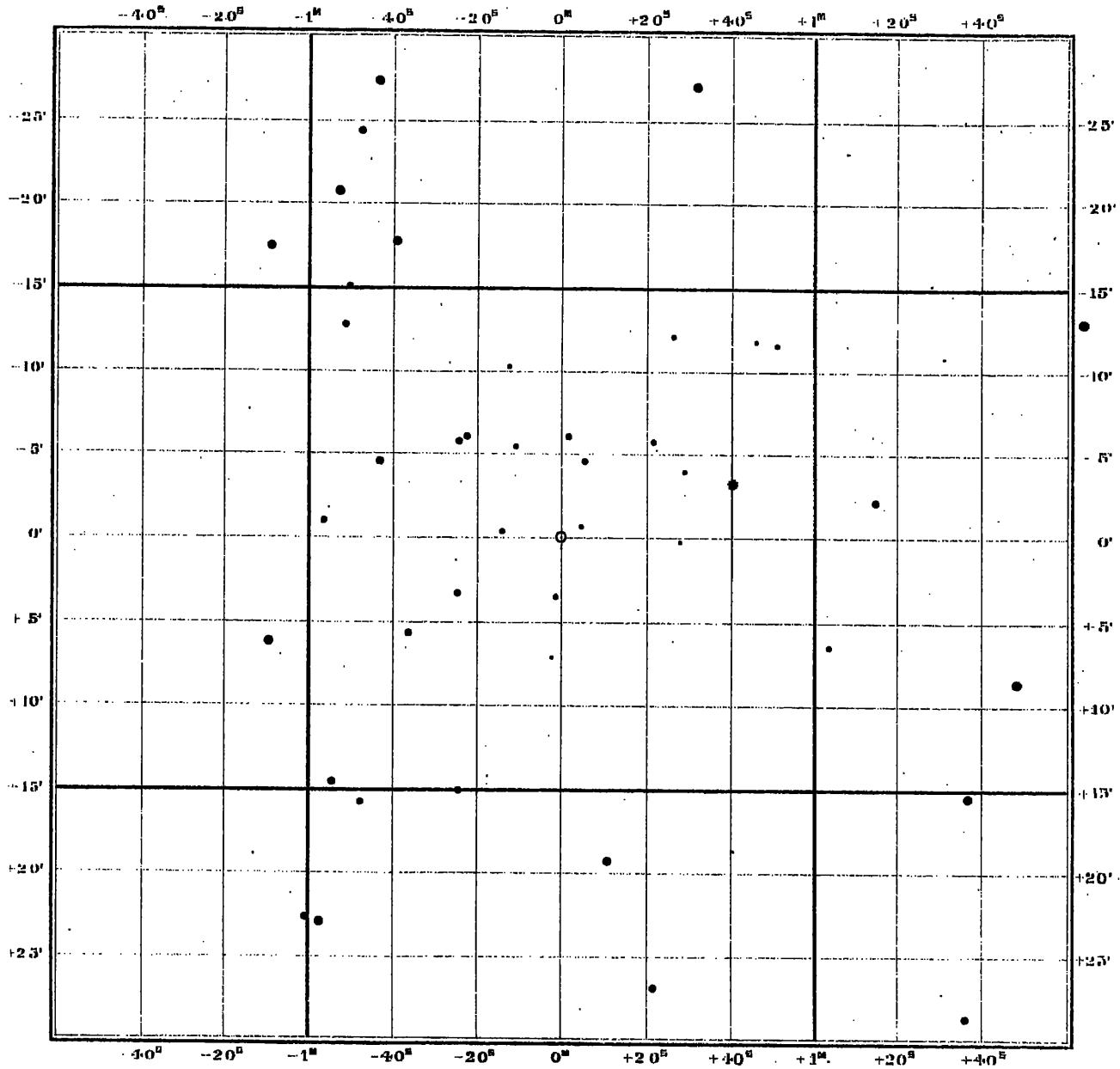
6132

R Ophiuchi

(1900.0) $17^{\text{h}} 2^{\text{m}} 1^{\text{s}}$ ($+3^{\text{s}}.44$) $-15^{\circ} 57'.6$ ($-0'.08$)

Color: 4.5; III.

Magnitudo: $7\frac{1}{2} - < 12$.



7 8 9 10 11 12 13

Series I.

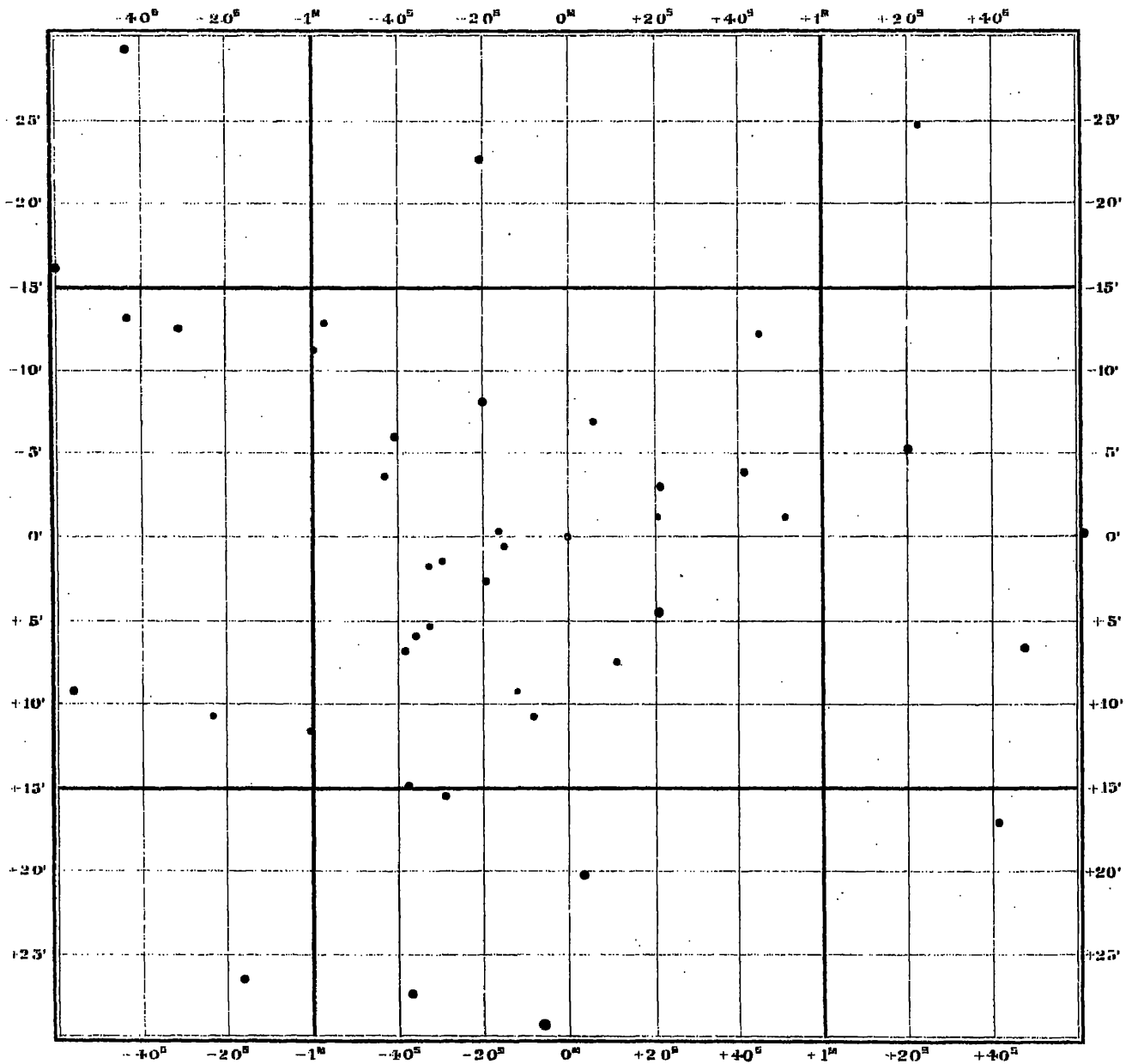
7733

Y Capricorni

(1900.0) $21^h 28^m 55^s (+3^s.28)$ $-14^\circ 25'.1 (+0'.26)$

Color: —

Magnitude: $10\frac{1}{2} - 14\frac{1}{2}$



● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●
7 8 9 10 11 12 13

Series I.

cf. Chart. Clinton. 8.

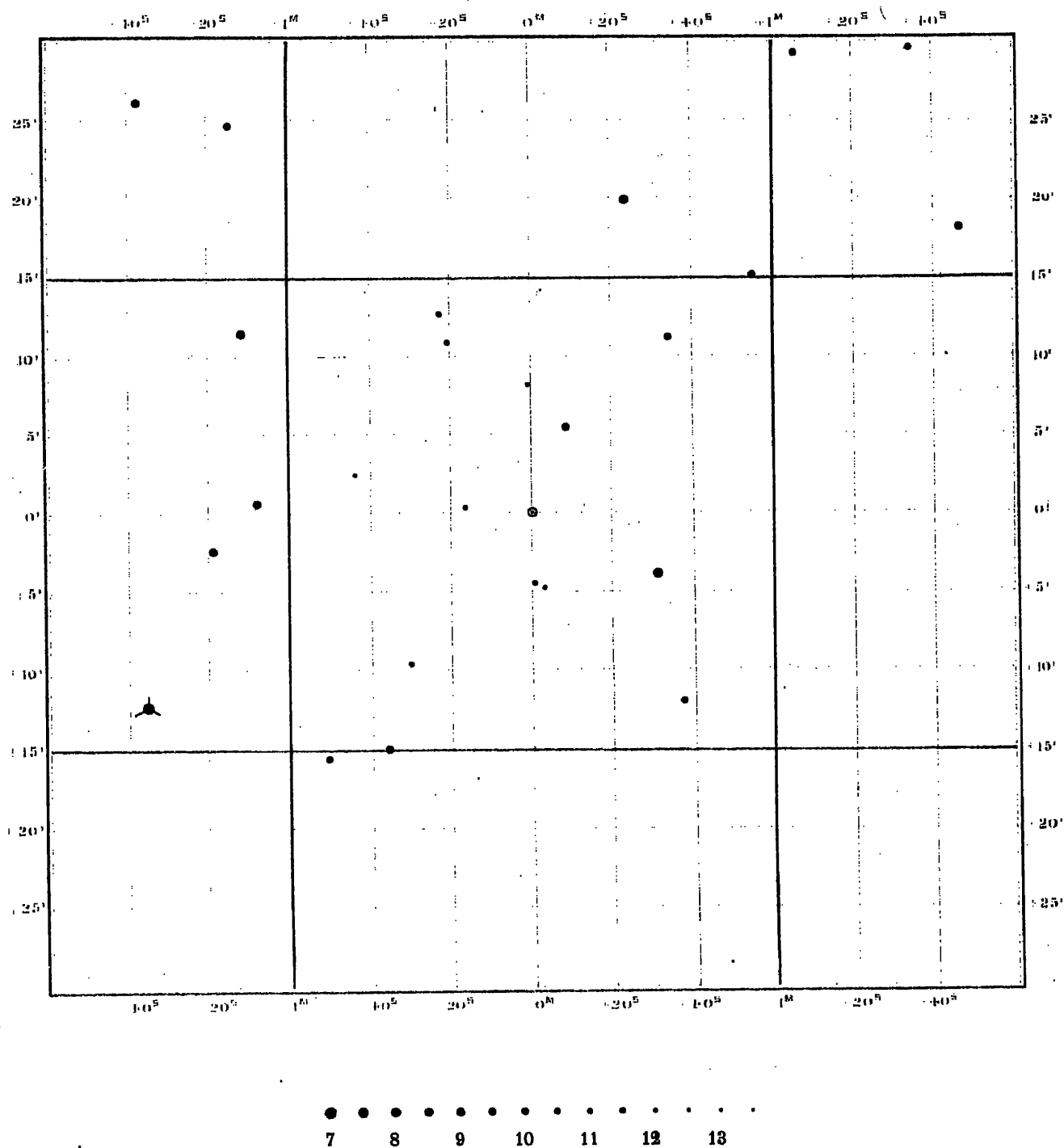
8230

S Aquarii

(1900.0) $22^{\text{h}} 51^{\text{m}} 45^{\text{s}}$ ($+3^{\text{s}}.22$) $- 20^{\circ} 52'.6$ ($+0'.32$)

Color: 4.0; III.

Magnitudo: $8\frac{1}{2} - 13\frac{1}{2}$?



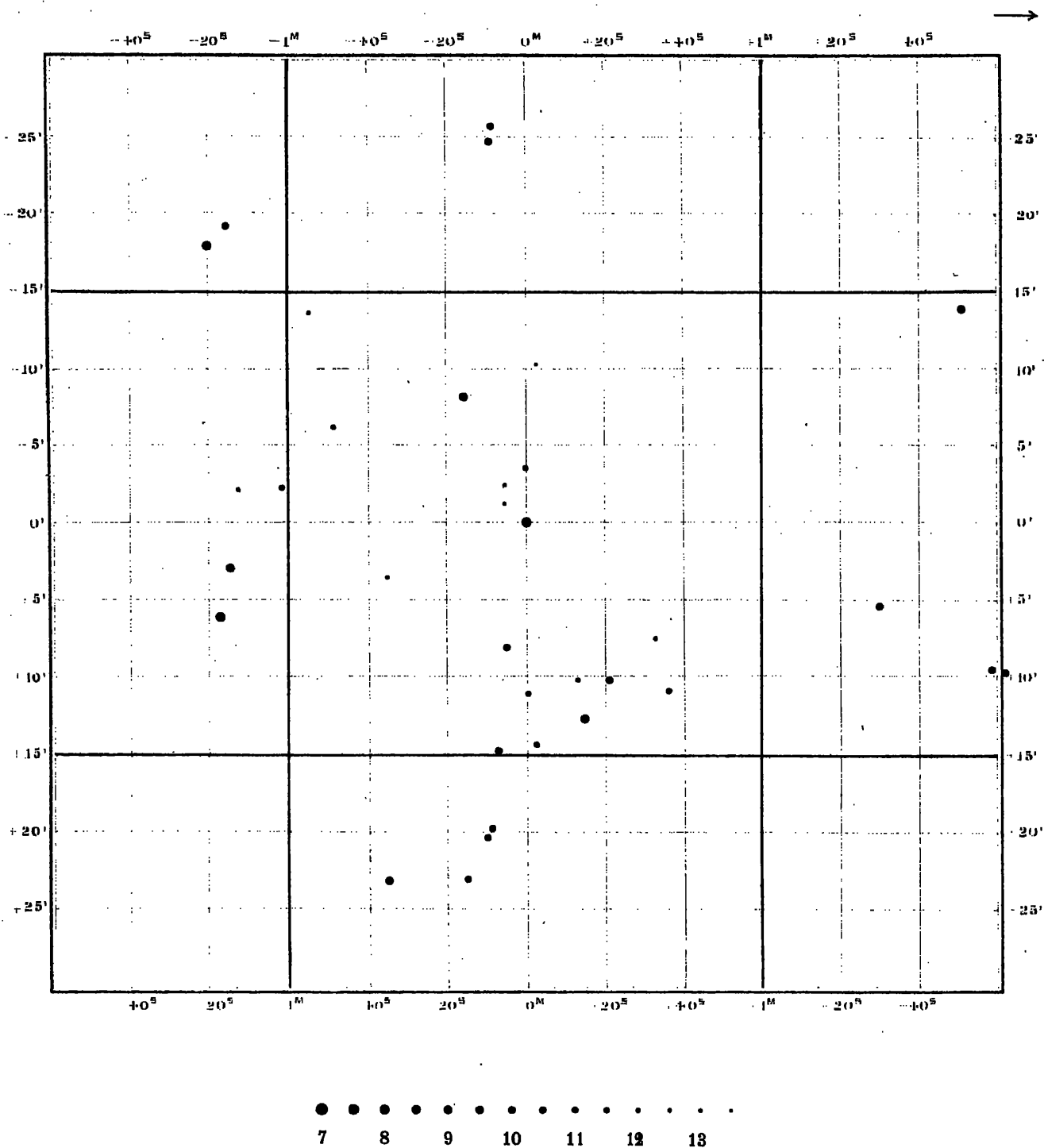
Series I.

114 S Ceti

(1900.0) $0^h 18^m 58^s (+3^s.05) - 9^\circ 53'.0 (+0'.33)$

Color: 2.0; III.

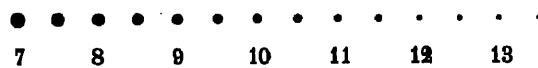
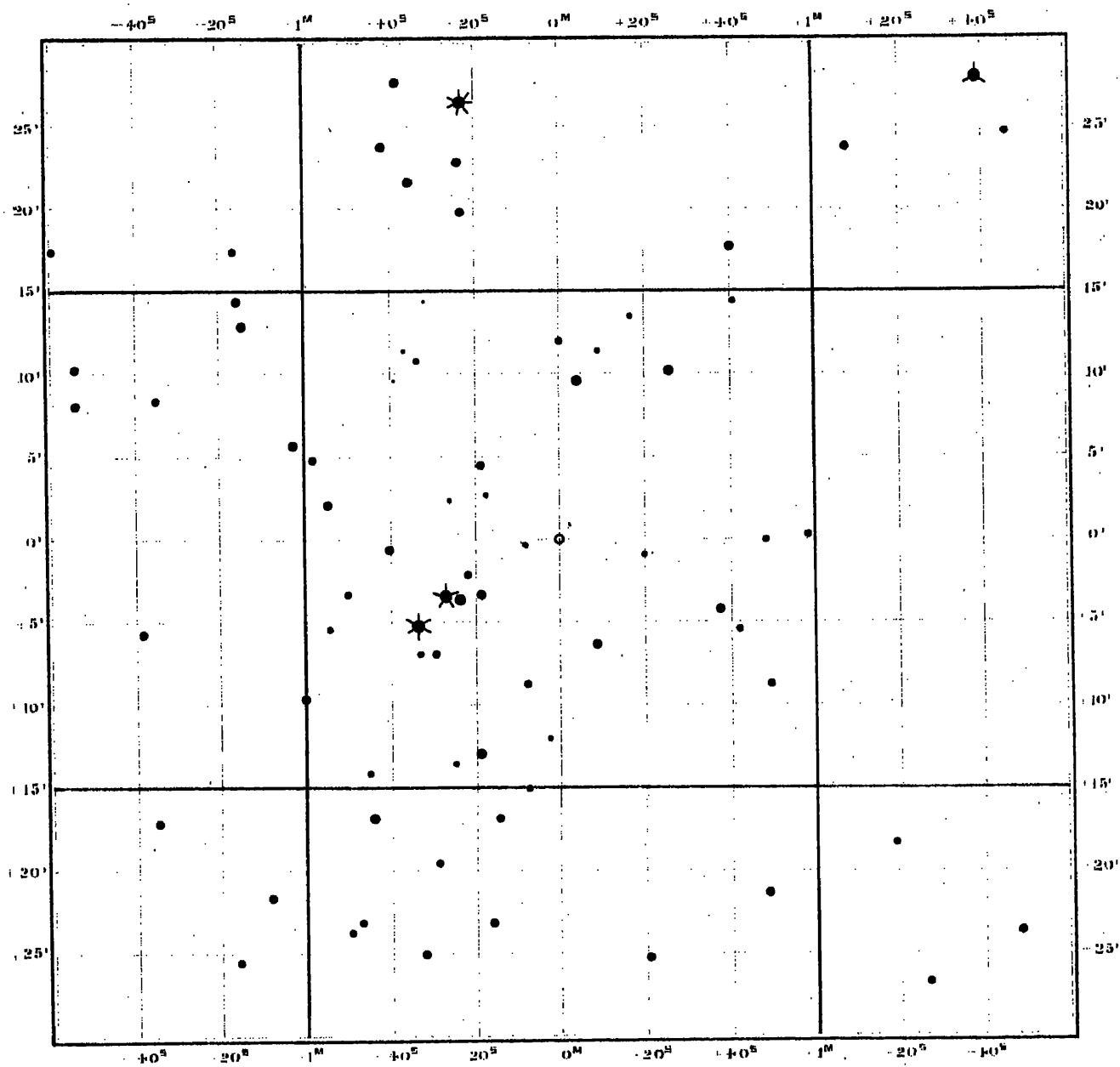
Magnitudo: $7\frac{1}{2} - 12$.



Series I.

T Orionis

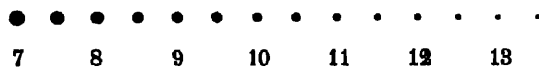
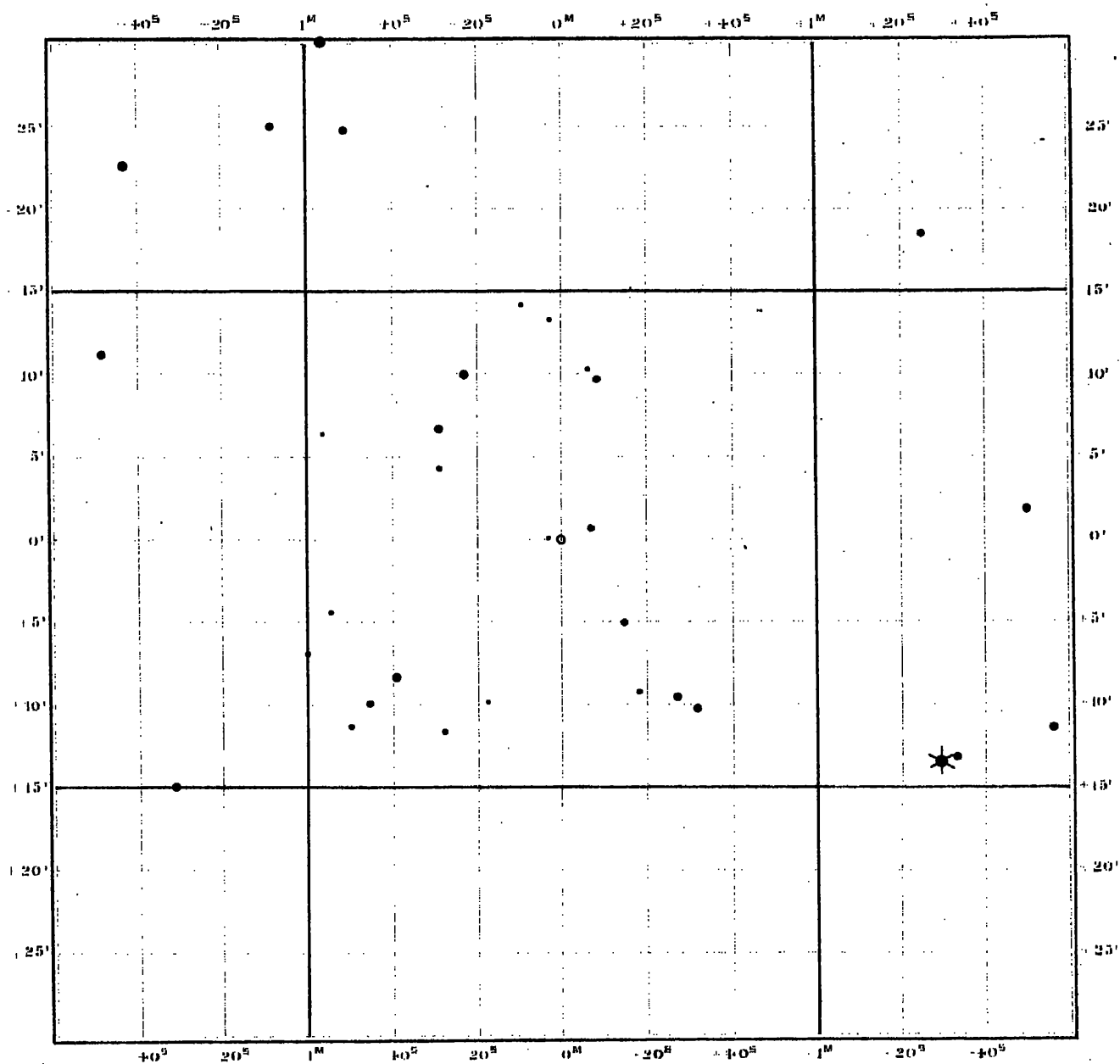
Color: 0; — **Magnitude:** $9\frac{1}{2} - < 13$.



Nebula et Trapezium.

T Librae

Color: —; — Magnitudo: $9\frac{1}{8}$ — < 14 .



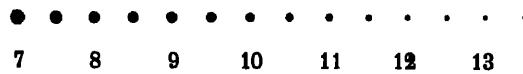
Series I.

cf. Chart. Paris, 46.

S Orionis

Color: 6.4; III.

Magnitudo: 9 – 12.



Series I.

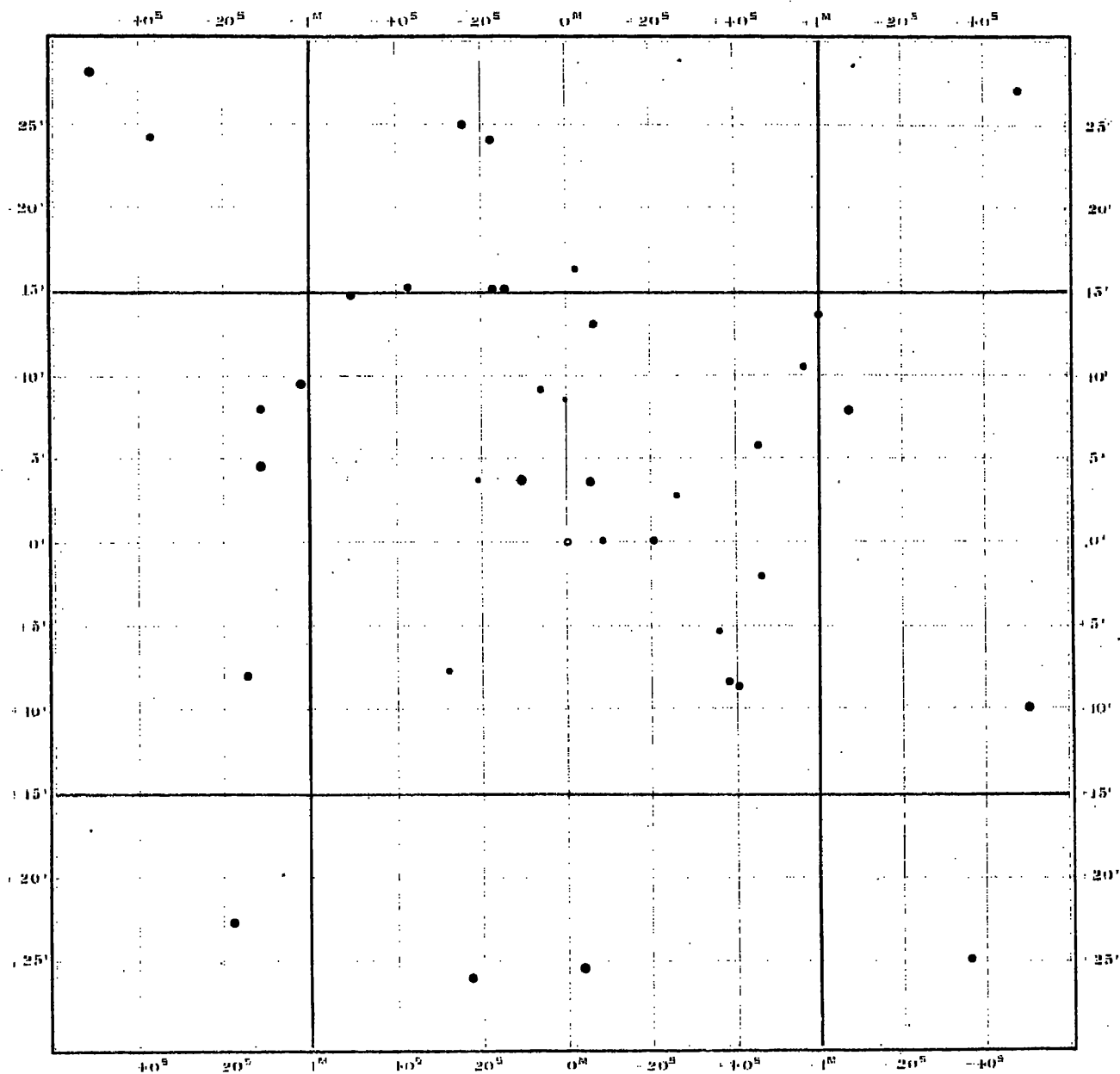
7252

W Capricorni

(1900.0) $20^{\text{h}} 8^{\text{m}} 36^{\text{s}}$ ($+3^{\text{s}}.54$) $-22^{\circ} 16'.8$ ($+0'.18$)

Color: —; —

Magnitudo: $10\frac{1}{2} - < 14$.



● ● ● ● ● ● ● ● ● ● ● ● ● ● ●
7 8 9 10 11 12 13

Series I.

cf. Chart. Paris 61.

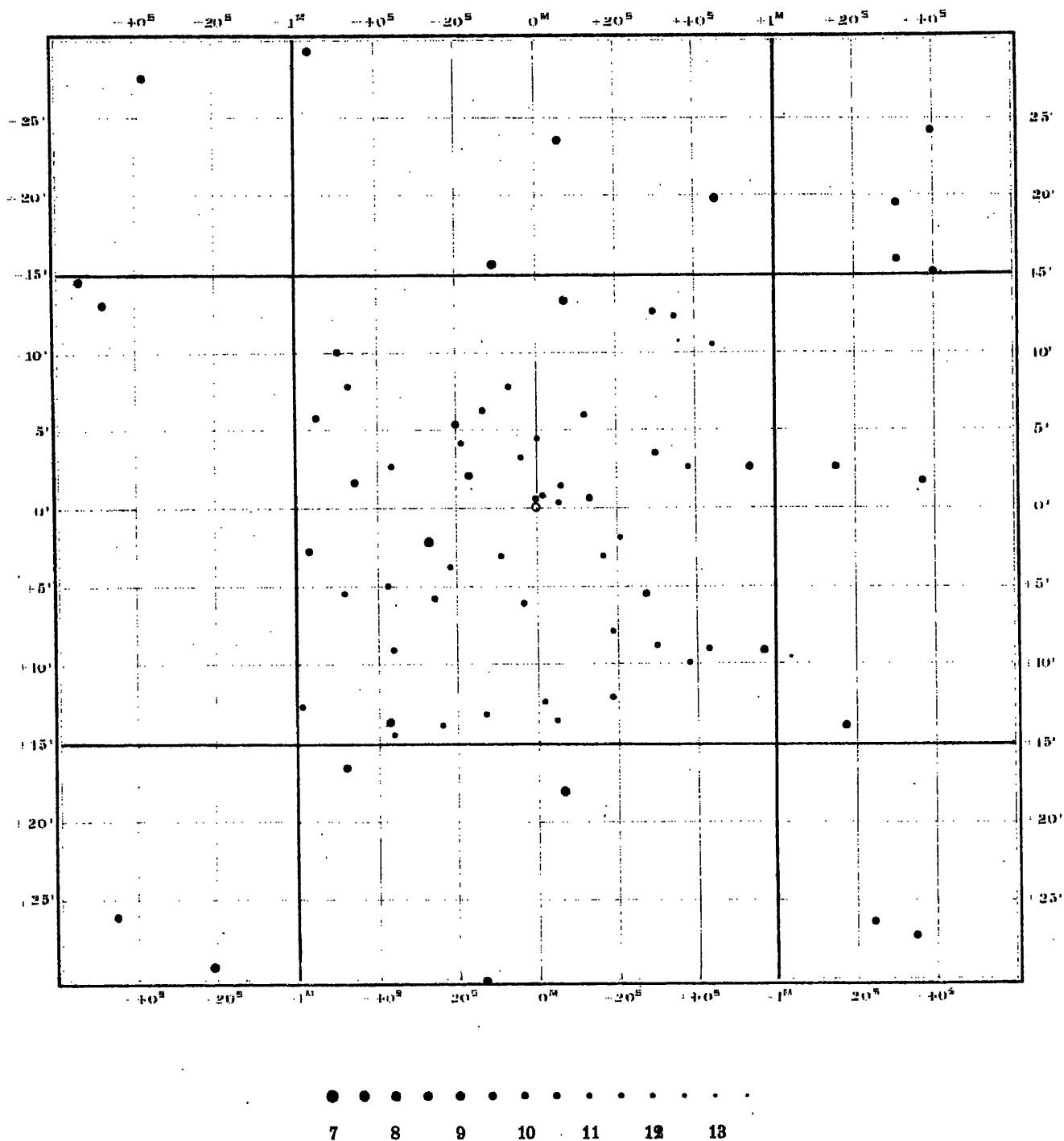
6923

Z Sagittarii

(1900.0) $19^{\text{h}} 13^{\text{m}} 47^{\text{s}}$ ($+3^{\text{s}}.56$) $-21^{\circ} 6'.6$ ($+0'.11$)

Color: 2; —

Magnitudo: $8\frac{1}{2} - < 12$.



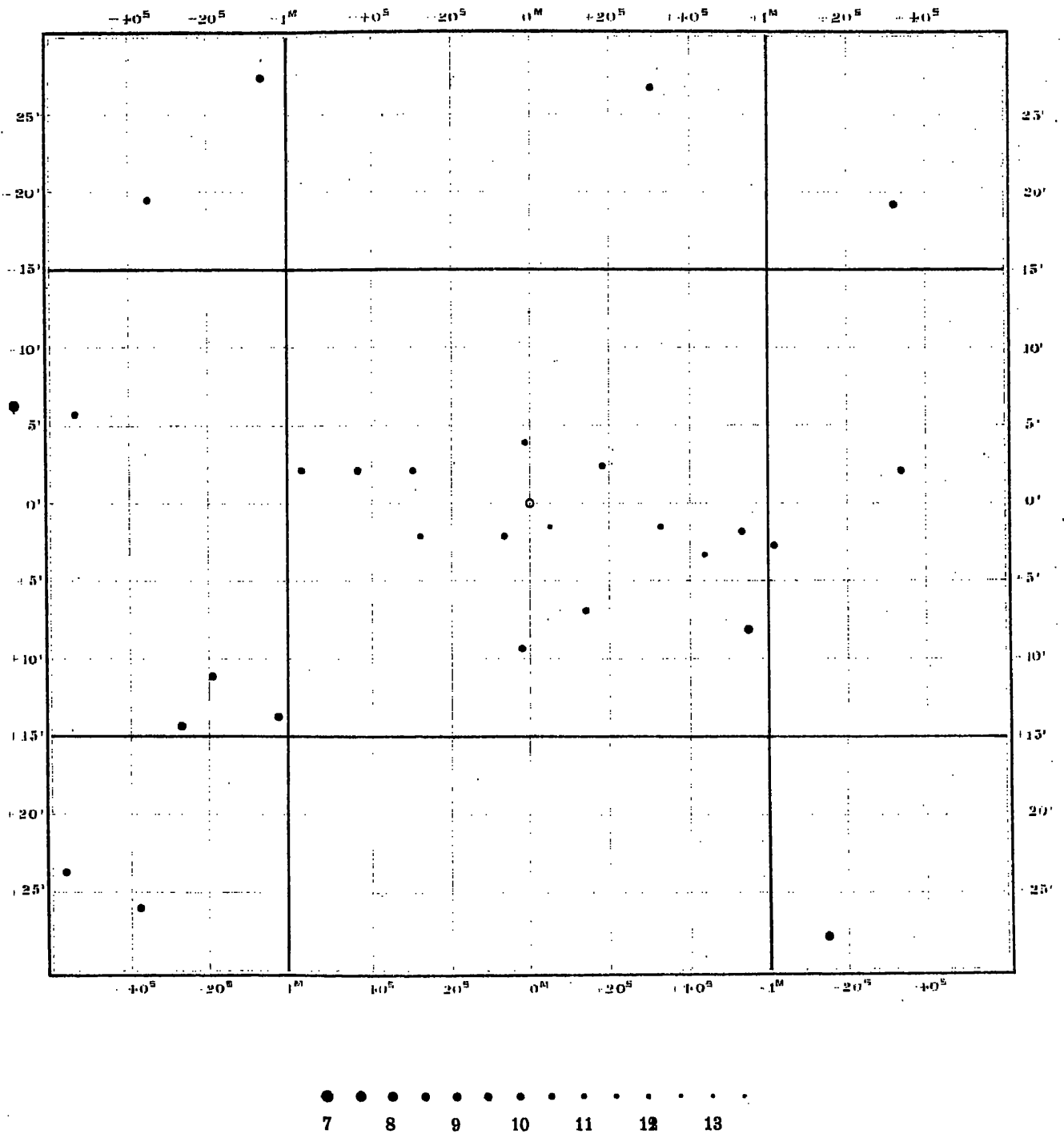
Series I.

8597

V Ceti

(1900.0) $23^{\text{h}} 52^{\text{m}} 47^{\text{s}}$ ($+3^{\text{s}}.08$) $-9^{\circ} 31'.1$ ($+0'.33$)

Color: —; — Magnitudo: 9 – 14



Series I.

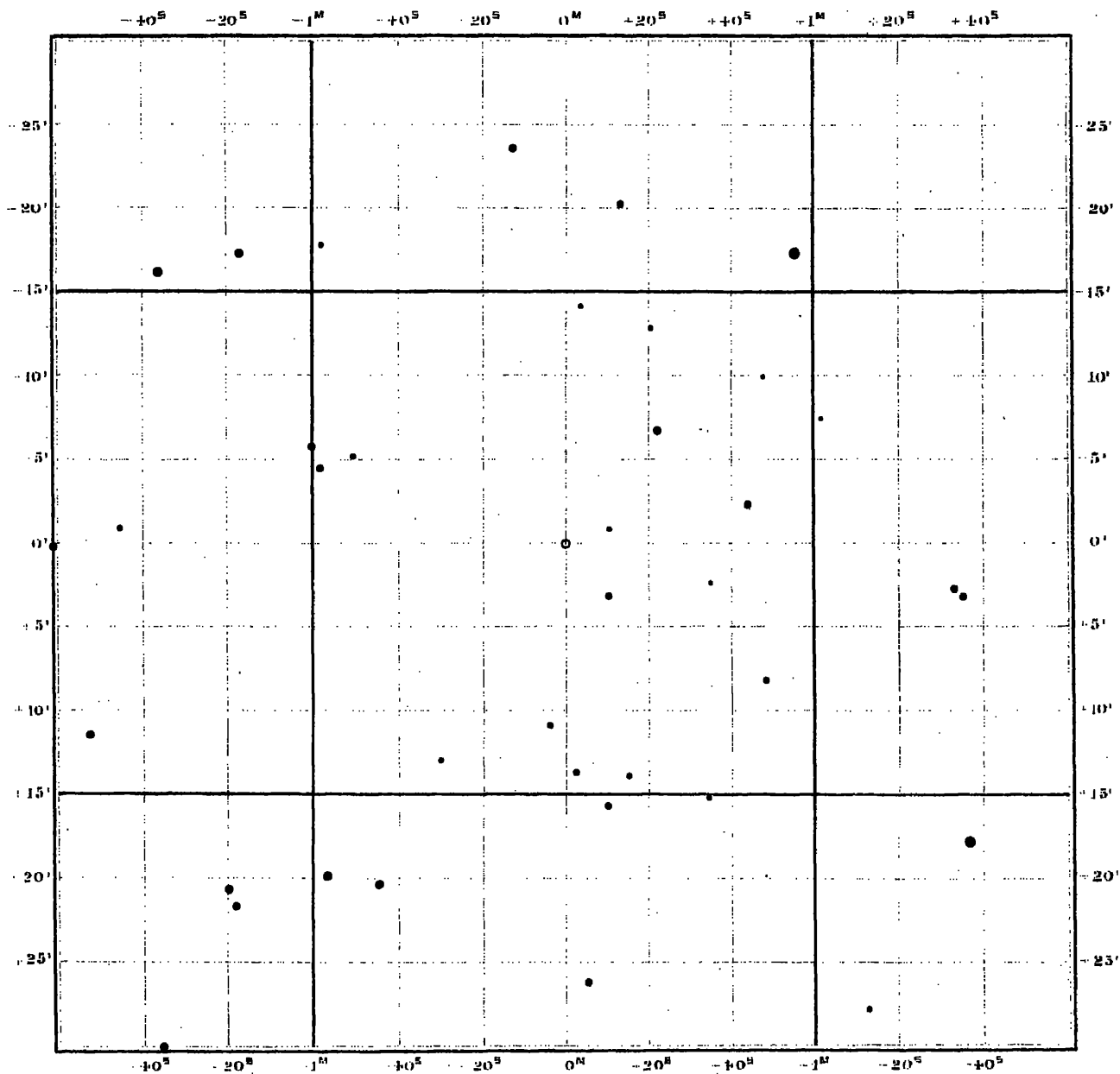
7571

V Capricorni

(1900.0) $21^{\text{h}} 1^{\text{m}} 47^{\text{s}}$ ($+3^{\text{s}}.50$) $-24^{\circ} 19'.3$ ($+0'.24$)

Color: 2.5; —

Magnitudo: 9 — 14



● ● ● ● ● ● ● ● ● ● ● ● ● ● ●
7 8 9 10 11 12 13

Series I.

cf. Chart. Clinton. 6.

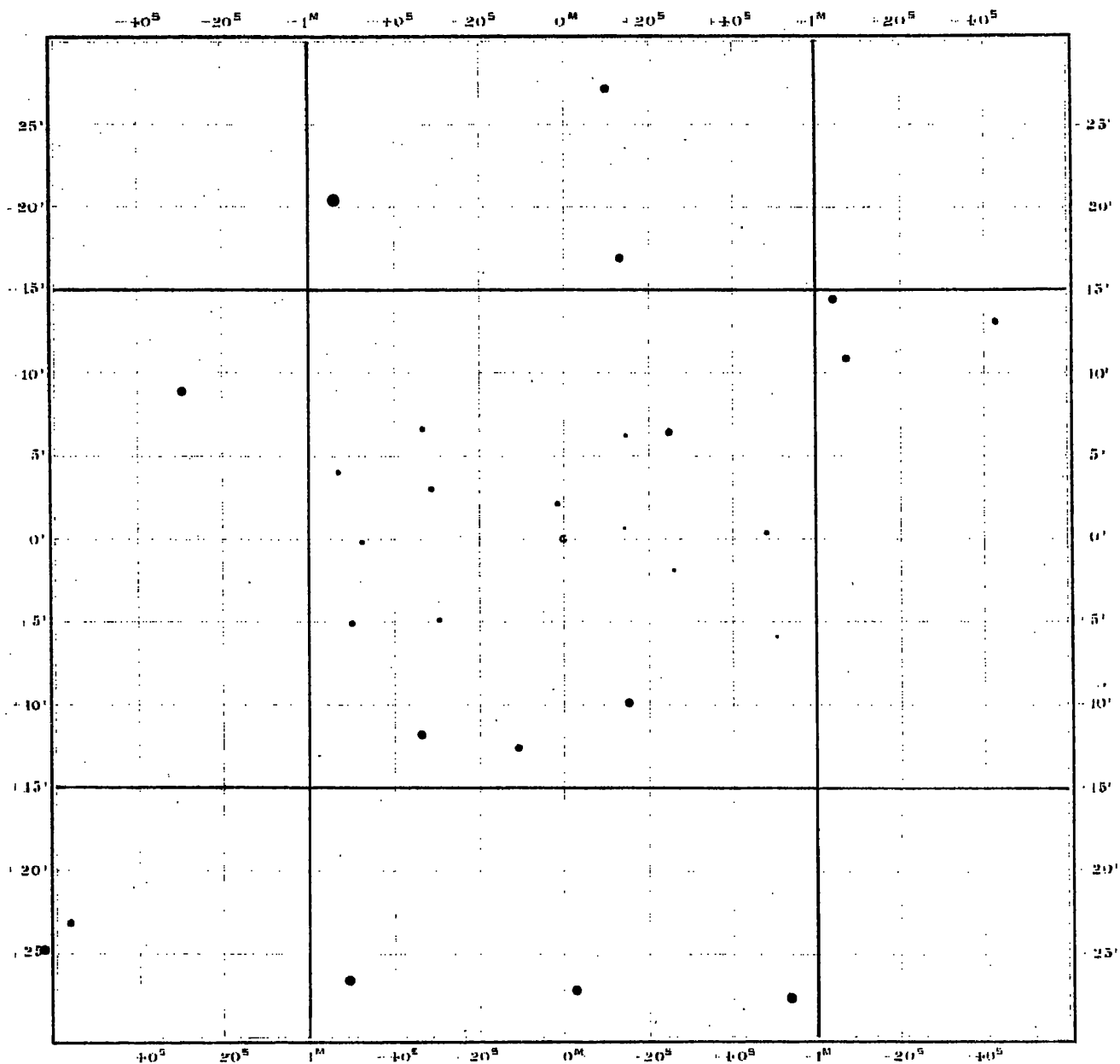
7907

U Aquarii

(1900.0) $21^{\text{h}} 57^{\text{m}} 52^{\text{s}}$ ($+3^{\text{s}}.28$) $-17^{\circ} 6'.5$ ($-0'.29$)

Color: —; —

Magnitudo: $9\frac{1}{2}$ — $14\frac{1}{2}$



● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●
7 8 9 10 11 12 13

Series I.

cf. Chart. Clinton. 18.

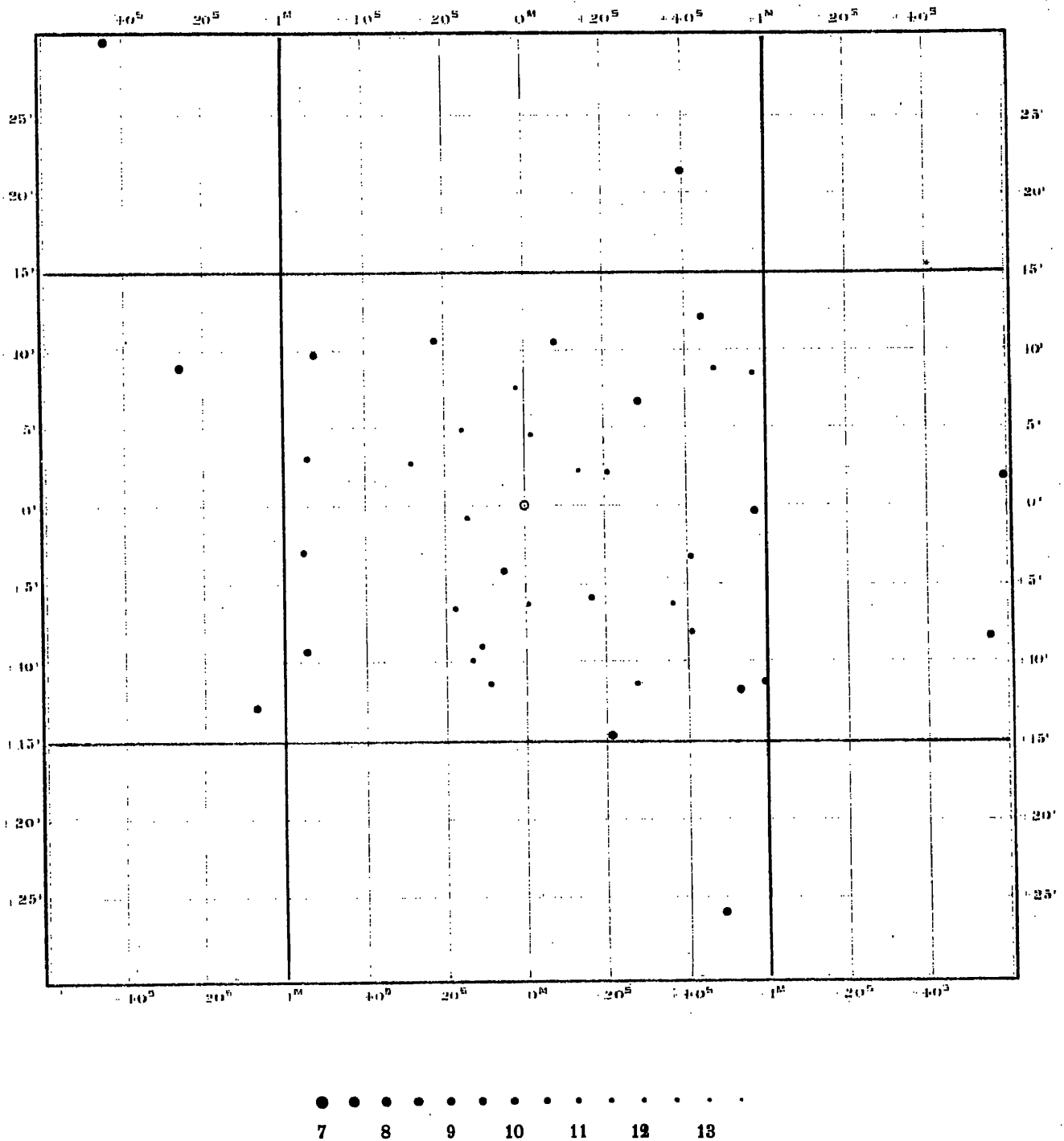
5931

S Ophiuchi

(1900.0) $16^{\text{h}} 28^{\text{m}} 30^{\text{s}}$ (+3.45) — $16^{\circ} 57'.0$ (—0.13)

Color: 1; —

Magnitude: $8\frac{1}{2}$ — < 13.



Series I.

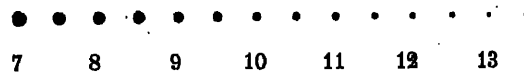
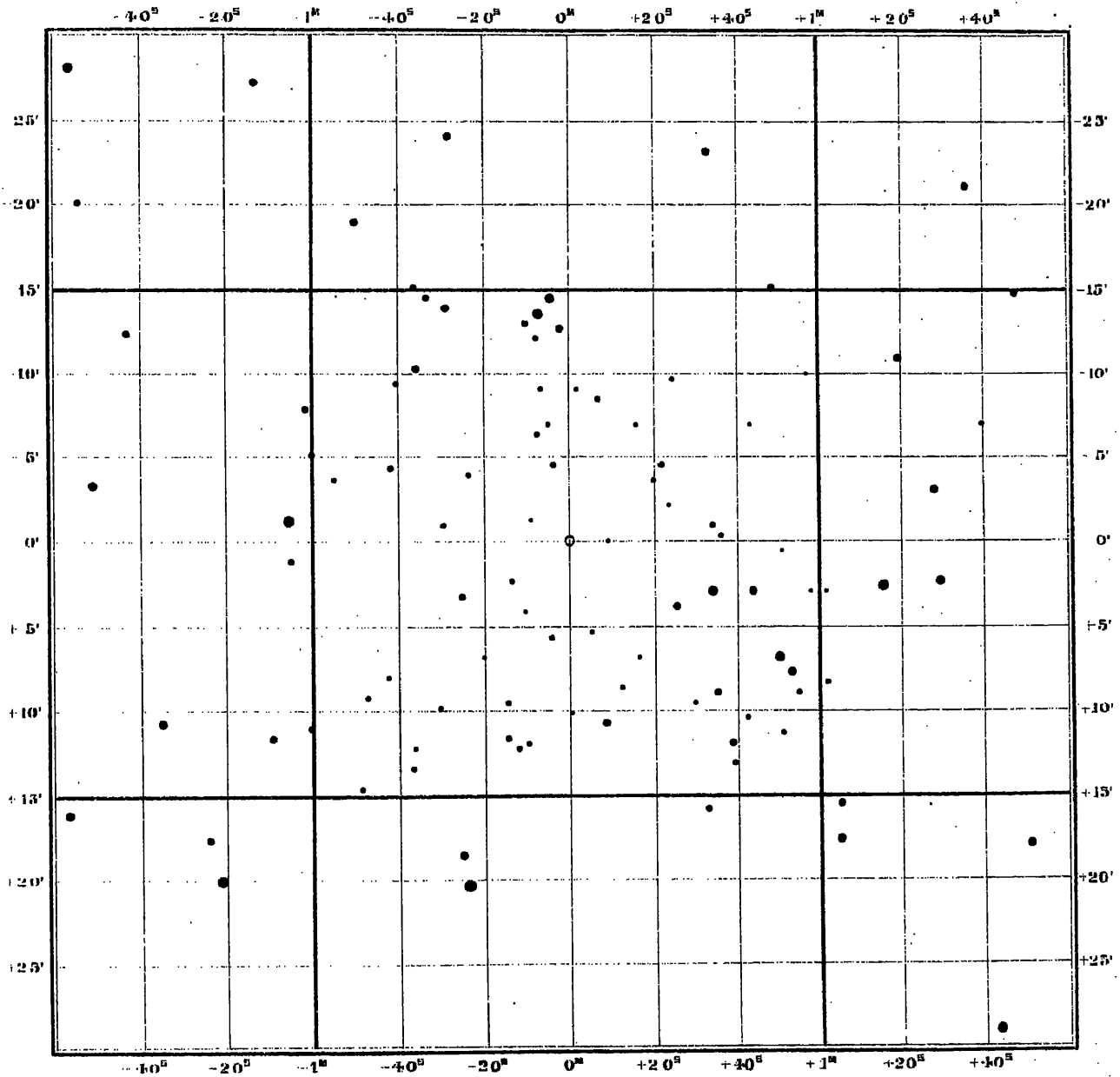
2857

U Puppis

(1900.0) $7^{\text{h}} 56^{\text{m}} 8^{\text{s}}$ ($+2^{\text{s}}.81$) $-12^{\circ} 33'.8$ ($-0'.16$)

Color: 3.2; III.

Magnitudo: $8\frac{1}{2} - < 14$.



Series I.

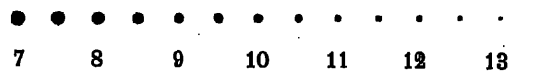
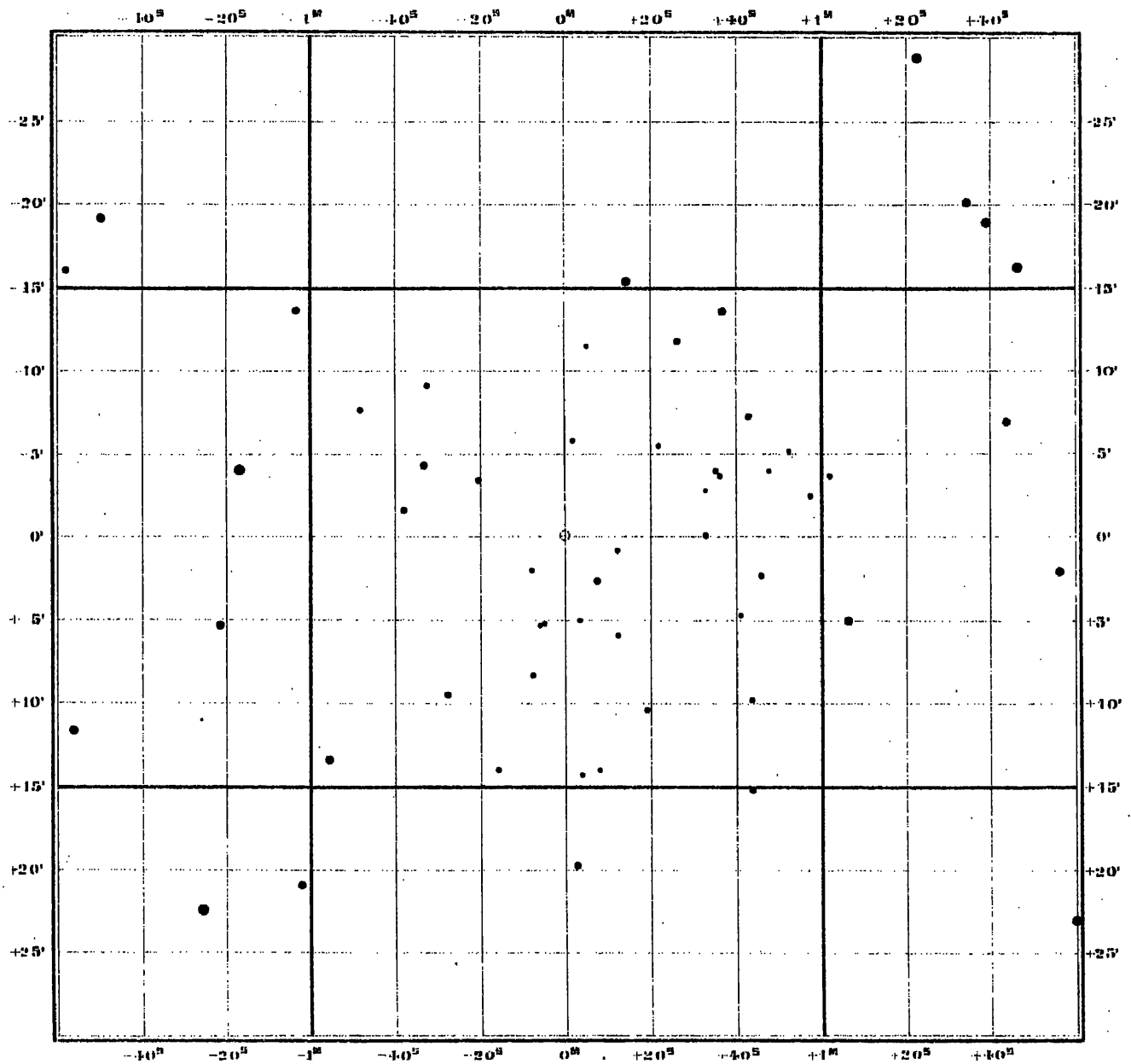
3184

T Hydrae

(1900.0) $8^h 50^m 48^s (+2^s.92)$ — $8^\circ 45'.6 (-0'.23)$

Color: 1.8; III.

Magnitudo: $7\frac{1}{2} - < 13.$

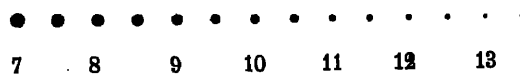
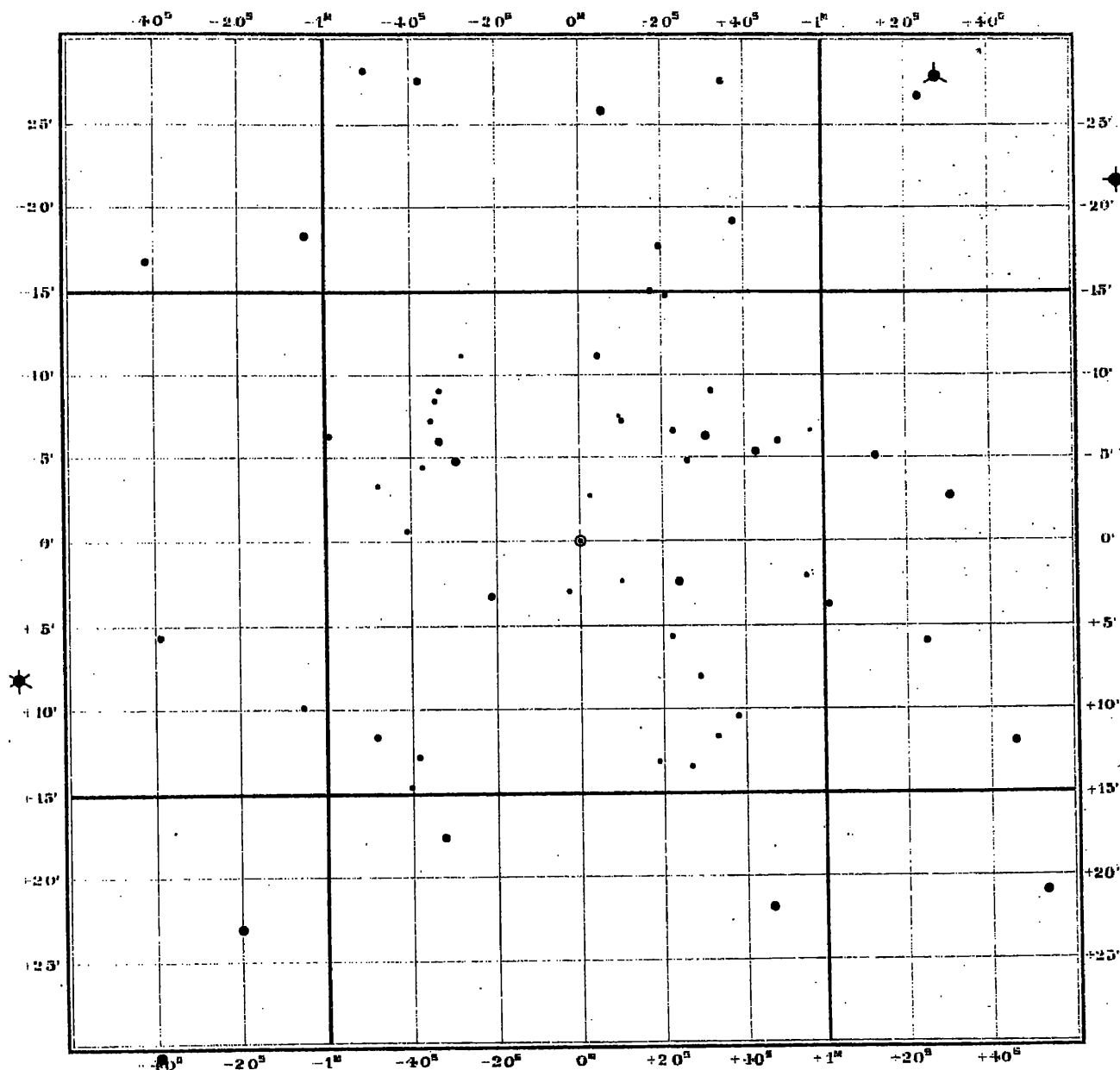


Series I.

T Aquarii

Color: 1.2; III.

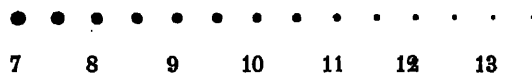
Magnitudo: $7\frac{1}{2}$ – $12\frac{1}{2}$.



Series 1. .

S Virginis

Color: 2.6; III. Magnitudo: 7 - 12¹/₂.



Series I.

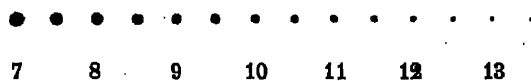
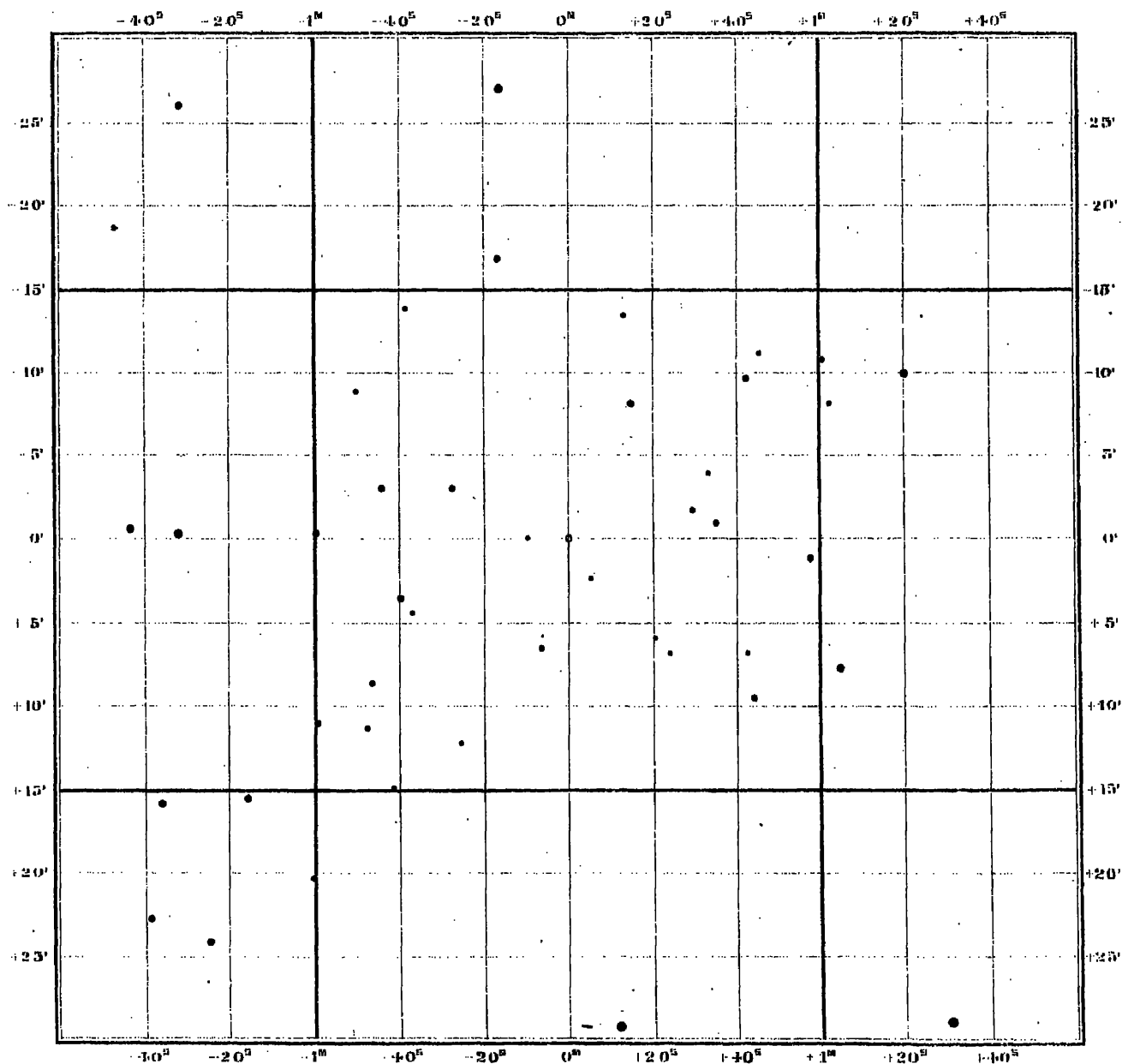
7234

R Capricorni

(1900.0) $20^{\text{h}} 5^{\text{m}} 42^{\text{s}} (+3^{\text{s}}.37) - 14^{\circ} 33'.8 (+0'.17)$

Color: 4; —

Magnitudo: 10 — < 13.



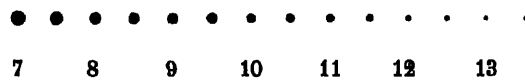
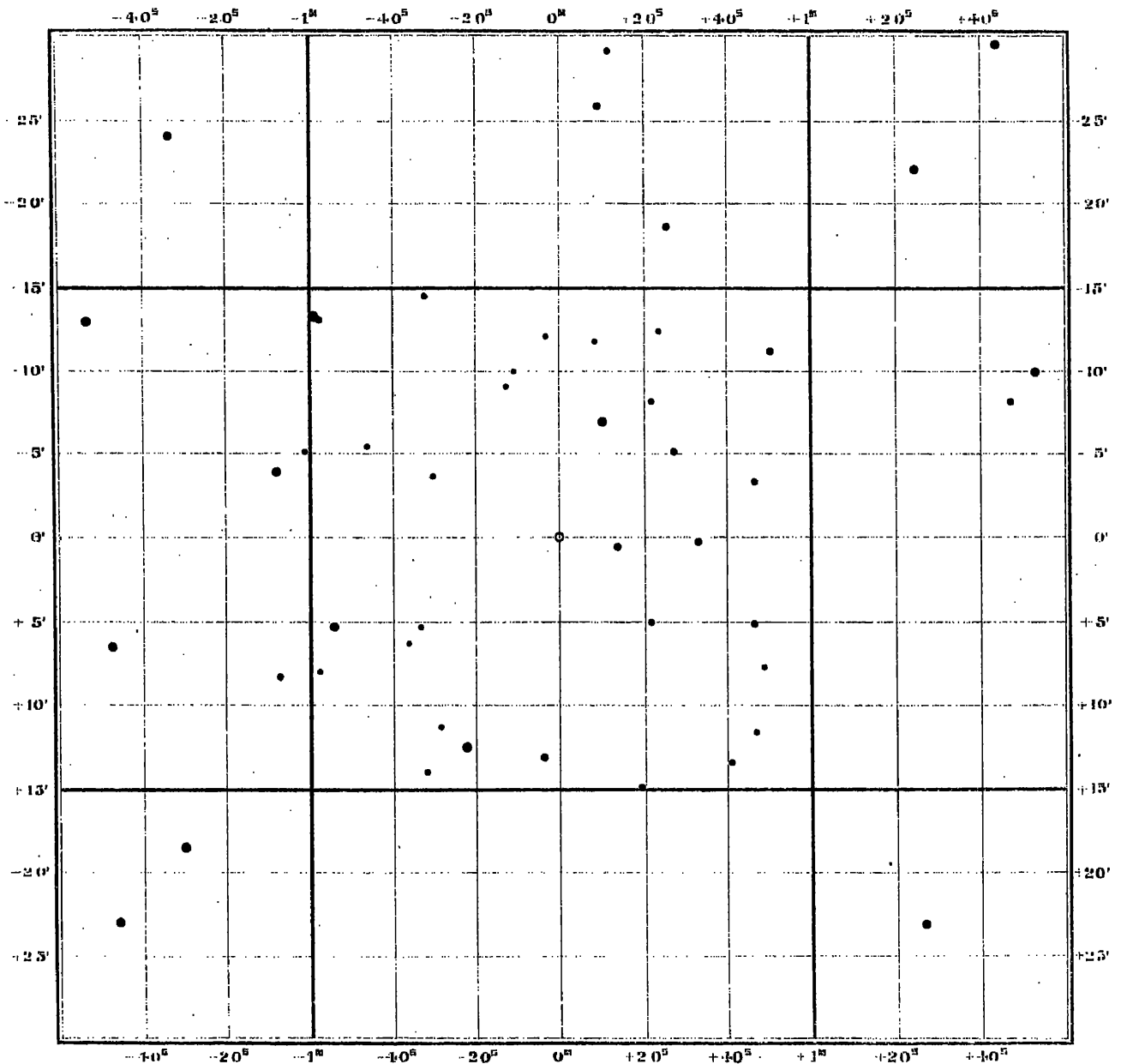
Series I.

5249

V Librae

(1900.0) $14^{\text{h}} 34^{\text{m}} 48^{\text{s}}$ ($+3^{\text{s}}.33$) $-17^{\circ} 13'.6$ ($-0'.26$)

Color: — Magnitudo: $9\frac{1}{3} - < 13$.



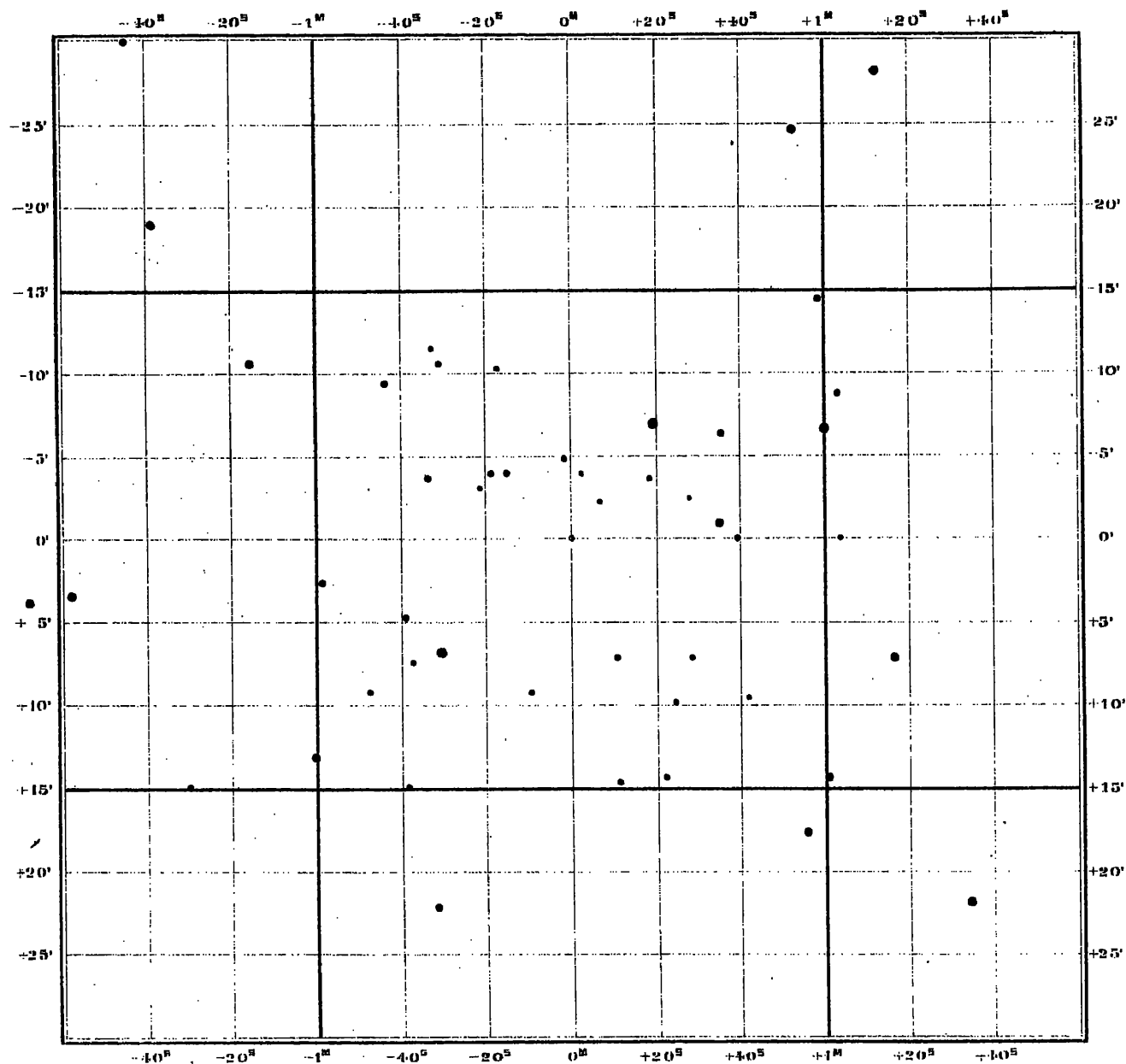
Series I.

7455

U Capricorni

(1900.0) $20^{\text{h}} 42^{\text{m}} 34^{\text{s}}$ ($+3^{\text{s}} 35$) $-15^{\circ} 9'.1$ ($+0'.22$)

Color: — Magnitudo: $10^{1/2} - < 13$.



Series I.

cf. Chart. Paris. 63.

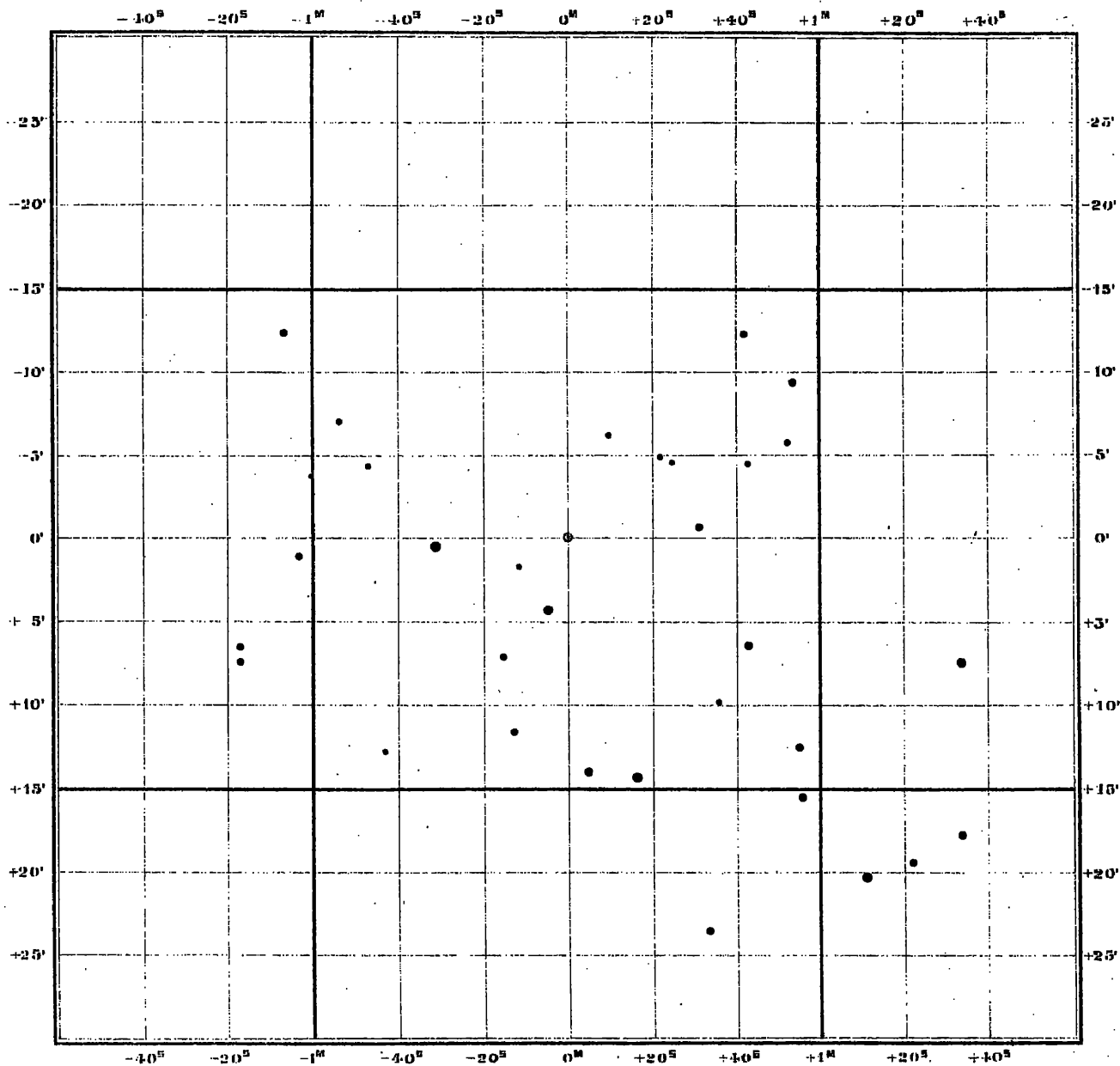
7659

T Capricorni

(1900.0) $21^h 16^m 30^s (+3^s.32)$ $-15^\circ 35'.0 (+0'.25)$

Color: 2; —

Magnitudo: 9 — $13\frac{1}{2}$.



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7 8 9 10 11 12 13

Series I.

cf. Chart. Paris. 64 A.

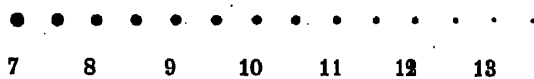
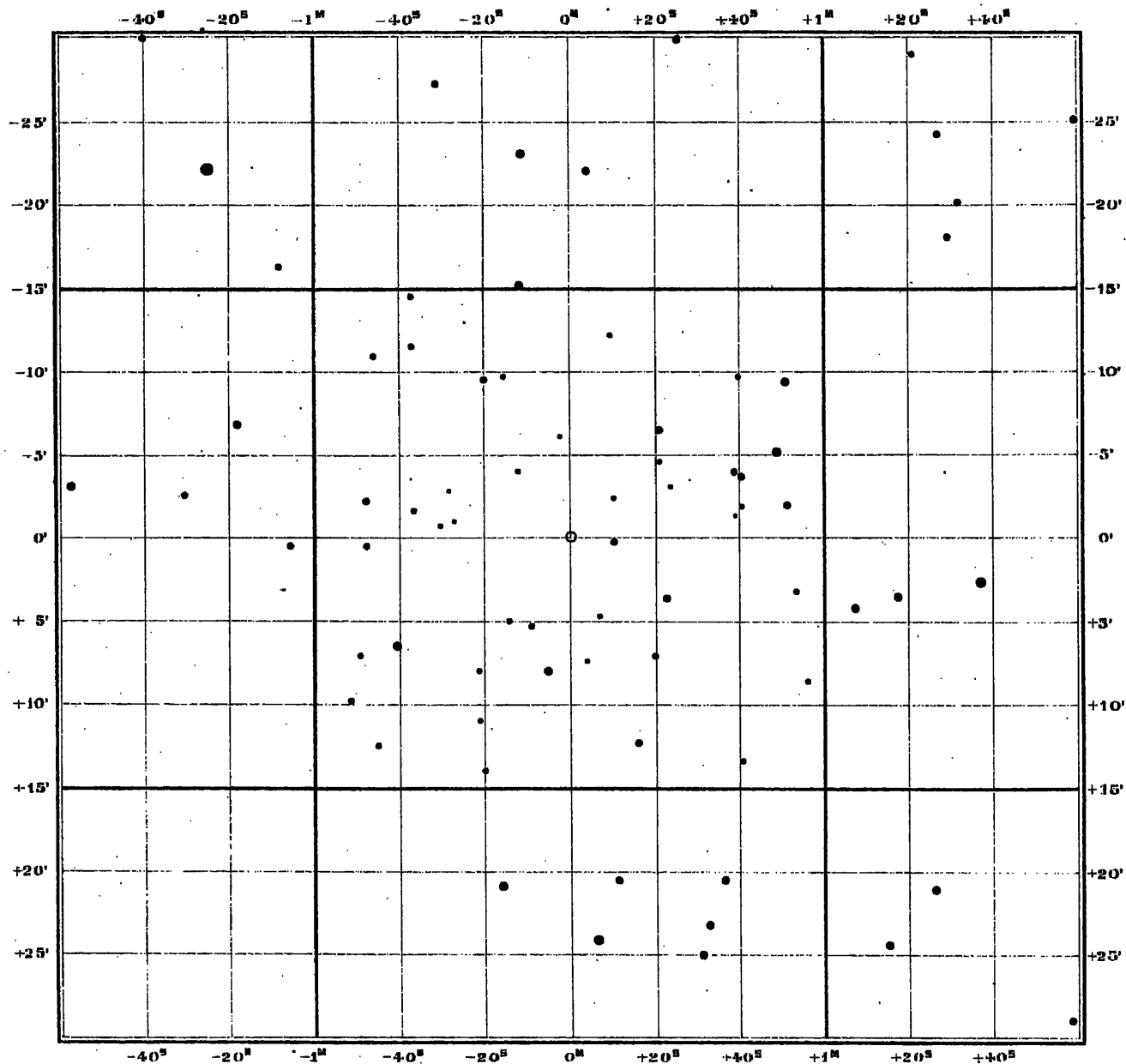
6903

T Sagittarii

(1900.0) $19^h 10^m 28^s (+3.47) - 17^\circ 8' 7" (+0.10)$

Color: 6.5; III.

Magnitudo: 8. - < 13.



Series I.